POPULATION EDUCATION FOR DEVELOPING COUNTRIES

K.R. Salkar

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Preface

Population problem of India has always interested me even during my college days in the fifties. Having secured Master's Degree in Economics from the University of Bombay, my concern for India's teeming millions still deepened. When the First Five Year Plan was drafted in 1950, it appears that the Planning Commission was not quite conscious of the explosive character of our population growth. The Planners thought that India's population was growing at the old rate of one per cent per annum which was an underestimate. The mistake was corrected only while framing the Third Five Year Plan.

Having been in the teaching profession for over 3 decades, I am deeply convinced that the rise in general standard of living and widespread education of the masses have an inverse relationship with the population growth. Better education means realization of individual and social responsibilities by the students to whom it is imparted.

Rapid population growth and economic development of a country act and react on each other and in this race between the two the latter is always the loser. This is what is happening in India where the pace of economic development has been slowed down owing to the unrestricted growth of our numbers during the last two decades or so. The Government-sponsored family planning programme too has had a very limited success in this country because of a variety of reasons, mainly one being the lack of proper education of the masses who mostly live in the villages spread throughout the country.

Education of the people appears therefore to be the most potent force which may generate necessary energy among the masses and enable them to think seriously about the problem of phenomenal population growth which is the root cause of our economic and social evils. Even family planning programme to be progressive requires a strong educational base. Voluntary acceptance of family planning methods in the developed countries was to a great extent a function of widespread general education among the people. Among the Asian countries Singapore, Taiwan and Hong Kong are examples which illustrate this aspect.

Indian educational canvass, even today, after more than three decades of independence of the country does not appear to be very bright. We have hardly succeeded in achieving 36.2 per cent literacy in 1981. This is not a very encouraging picture from the point of view of population control. The wave of general education of the masses should spread with more vigour and the students in schools and colleges should receive necessary instruction in population matters in order to create in them 'population awareness' which may form the basis of their future behaviour as responsible parents. Population education should have, therefore, a pride of place in the curricula of schools and colleges in India.

My first contact with the subject 'Population Education' took place during my visit to the Philippines as a UNESCO Fellow to participate in three-month course at the Seventh Institute for Key Teacher Educators from March to May 1971 where I had the privilege to work under Prof. J.E Jayasuriya of Sri Lanka, ex-Regional Adviser on Population Education, UNESCO Regional Office for Education in Asia, Bangkok. Being a student of Economics and Education, Population Education became for me a subject which would bridge the two.

The introduction of population education in Indian schools is still in its initial stage. The National Council of Educational Research and Training, New Delhi has taken a lead in this matter and most of the States and Union Territories have launched comprehensive schemes under National Population Education Project. Universities too are gradually entering into this field.

The present study is a humble attempt to present population education in as simplified way as possible but through a comprehensive approach. Separate sections have been devoted to in-school education, out of school population education; population education for university students and finally, environmental education, as it is felt that human being is inescapably a part and parcel of environment and his contribution should make the environment more beautiful and bountiful.

As population education is finding its way through the syllabi of schools, colleges and colleges of education it is hoped that the book will prove useful to the students and teachers of these institutions and all those interested in population problem.

A study on population situation in Goa has been specially inserted as Annexure not because the author happens to be a Goan but only because Goa has the unique advantage of having the lowest fertility rate in the country and it is hoped that the conditions of low fertility in Goa will be replicated in the rest of the country in order to ease the population problem we are facing.

K.R. Salkar

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ANNEXURE

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1

Population as a World Problem

Magnitude of the Problem

Of the many challenges which mankind has to face today, the most significant and the most menacing is the problem of growing population.

Not that man did not multiply in the past or that he will not do so in future, but the accelerating speed at which the growth is taking place today is quite alarming.

Every generation has had its own problems but the ever-increasing population may be viewed as the super-problem of the present generation.

Population growth, though it may directly affect some particular countries or regions of the world, at least indirectly affects the whole world. In no period of human history did the world became so close knit economically and emotionally as it is today.

The world-wide interest in uncontrolled growth of population is generated mainly by two considerations: relationship between the growing numbers and the available resources; and the restraints which this uncontrolled growth imposes on our raising or even the maintenance of our existing standards of living.

Thomas Malthus may be called the father of modern population study. "He is more responsible than anyone else for bringing population study within the field of social science. . . . No longer could man's growth in numbers be looked upon as something which did not concern him because he could do nothing about it. The study of population was to become a proper field of investigation with the aim of gaining knowledge with which to better man's living conditions." (61)

The world today may be divided, in respect of population, into two blocks: developed and developing countries. The theory of Malthus still holds good in case of these latter countries when it says that "Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio". (61)

Considering the seriousness of the population problem the General Assembly of the United Nations voted for and carried a resolution in December 1962 recognising the intimate relationship that exists between the growth of population and economic development and suggested certain measures to be taken to face the problem on an emergency footing.

The United Nations estimated that the world population was growing at the rate of two per cent per year. This implies that the world population will double every 35 years and in a century it will increase nearly eightfold. To quote Dr. Zakaria: "Technological progress especially industry, for economic betterment, and in medicine and surgery for improvement in health, have caused the world population to double itself between 1850 to 1925. By 1980 according to the United Nations' calculations, it will again double itself, reaching the staggering figure of four billions." (55) By now the world population has increased to about 4.5 billions.

Table-I roughly estimates world population from the beginning of the Christian Era.

TABLE 1

Growth of World Population

Christian Era	*250 millions*
1650	500 millions
1850	1 billion
1930	2 billions
1960	3 billions
1975	4 billions
1986	5 billions

So the first billion was added in 80 years from 1850 to 1930; the second, in 30 years from 1930 to 1960, the third in 15 years from 1960 to 1975 and the fourth will be in 11 years from 1975 to 1986. At this rate the population of the world will be around eight billion in another 35 years.

According to Population Reference Bureau's annual data sheet (1966) it was estimated that the world population totalled 3.346 million i.e. an increase of 65 million in one year. The President of the Bureau while remarking on this growth said:

> ". . . .It took a million years for the world population to reach the billion mark in 1800. In the intervening 166 years, the world population more than trebled. So rapid has the acceleration in growth been that, as matters now stand, the next doubling will occur around the end of the century and the population would increase to more than 9 billion in about 5 years. . . In 2066, the total would be 24 billion". (5)

The United Nations Population Division came up with projections of growth through to 1980 in three sets—high, medium and low as shown in the following table.

TABLE

Projected Population in 1980

(in million)

	1950	*1980*		
		High	*Medium*	*Low*
World	2,454	3.990	3.628	3.295
Africa	198	327	289	255
North & Latin America	330	577	535	487
Asia (excluding Asiatic U.S.S.R)	1.320	2,227	2.011	1.816
Europe (including Asiatic U.S.S.R.	593	840	726	721
Oceania	13	19.2	17.5	16.1

These estimates compared to those given by the Population Reference Bureau (PRB) data sheet 1971 lead one to the inevitable conclusion that the population figures forecast for 1980 by the population division of U.N. in 1954 under medium projection was an underestimate as they have already been crossed by 1971 in which year the world population according to PRB data sheet was 3.706 million.

The major characteristic of growth of world population is its unbalanced growth between the developing and developed countries. The terrific accelerating speed at which the growth is taking place in developing countries is a cause for concern for the world as a whole. The phenomenon which is being witnessed in the developing countries in respect of increasing numbers is not a new one. The so-called developed countries have also experienced the same moments in their lives but certainly under a different and more healthy background of things.

According to F. Dorn Harold "Around 1700, the expectation of life at birth of the white population of North America and of Western Europe was about thirty-three years and probably had increased very little during the preceding three or four centuries. In 1950, the expectation of life at birth of the white population of the United States was sixty nine years, an increase of more than 100 per cent." (33)

Technological changes in agriculture, development of modern industry, increased control of diseases by means of improved housing, proper sanitation, better food and drinking water, knowledge of preventive medicine, discovery of antibiotics and insecticides and also the expansion of commerce and opening up of new continents, all this upset the balance in previous centuries between fertility and mortality. The latter being affected favourably the European population multiplied rapidly. "There were about 100 to 120 million Europeans in 1650. Three centuries later the number of persons of European stock had increased eight-fold, reaching a total of about 940 millions." (33)

However, a casual observer will note that the whole process was gradual and actually spread over a long span of more than one century and the realisation dawned on the people of the developed countries that with the increasing survival rates of children it was necessary for each couple to restrict family size in which both their comfort and that of their children could be better assured.

The large family soon became a burden. The changing structure of production, with a declining importance of the family as a production unit, with a growth of impersonal system for the allocation of jobs, and with the development of economic roles for women outside the home, tends to increase the possibility of economic mobility that can better be achieved with small families.

Thus, in developed countries there has been a shift from a relatively low rate of increase due to the restraining effect of a high death rate upon a high birth rate to a correspondingly low rate of increase due to the voluntary control of fertility which brought about a fall in the birth rate to the low level reached by the death rate. This is known as the demographic revolution. This shift affected a little less than one-third of the world's population.

One of the main features of economic development is increasing urbanization. The thinking in favour of small family has started among the urban groups at the higher end of the socio-economic scale and has spread to small cities to the lower income groups and thence to rural areas. The speed at which this movement spread depended upon the tempo of economic development in these countries. In other words, these countries have completed the so-called demographic transition consisting of the following stages:

Firstly, an insignificant increase in population because of high birth and death rates; secondly, a very high rate of population growth caused by a decline in the death rate, the birth rate being more or less stationary at its old level; and thirdly, a low rate of population growth owing to both low birth and death rate, the birth rate being a little higher than the death rate.

Demographers opine that the developing countries of the world are still grabbling in the second stage of demographic transition of rapidly decreasing death rate and birth rate being still high. This widening gap between the two has caused such a terrific increase in population in these countries as to nearly neutralize the benefits which they would have derived from their planned economic development. Developing countries are caught in the vortex of these changes, but without the advantages the developed countries had of a long period of time to realize the necessity of family limitation.

The demographic explosion in less developed countries which form nearly two-thirds of the world's population namely the people of Africa, Asia and Latin America has caused a serious imbalance in world population growth. At the beginning of this century they had an estimated birth rate of forty or more per 1,000 per year and a death rate only slightly lower. Advantages of factors which brought about a remarkable increase in longevity in Europe, North America, Australia and New Zealand, have been available to the lesser developed countries too. The result has been an absolute increase in the population of these countries in an unprecedented way in the recorded history of mankind. This fact can very well be judged from the following table:

TABLE 1.2

Estimated Population of the World since 1650

Year	*Population (in million)*	*Average Annual Increase per 1,000 since preceding date*
1650	545	—
1750	728	3
1800	906	4
1850	1,171	5
1900	1,608	6
1950	2,517	9
1958	2,903	18
1964	3,220	17

The above table clearly demonstrates that the world population more than doubled itself from 1650-1850, in a period of two centuries, while it became little less than three-fold from 1850 to 1964 i.e. in a period of 144 years only.

The factors responsible for this growth and the parts of the world which contributed predominantly towards this increase have already been discussed. However, it will be of interest to depict a full picture of growth of world population in the twentieth century, to understand explicitly the relative contributions of developed as well as developing countries.

TABLE 1.3

Population Growth in the 20th Century

Year	*Developed (a)*	*Underdeveloped*			
		Total	*Asia (b)*	*Latin America*	*Africa (c)*
			(Population in millions)		
1900	554	996	813	63	120
1925	700	1,207	961	99	147
1950	838	1,659	1,297	163	199
1975	1,115	2,741	2,107	303	331
2000	1,448	5,459	4,145	651	663
			Per cent Increase		
1900-1925	26.4	21.2	18.2	57.1	22.5
1925-1950	19.7	37.4	35.0	64.6	35.4
1950-1975	33.0	65.2	62.5	85.9	66.3
1975-2000	29.9	99.2	96.7	114.8	100.3
			Per cent of earth's total		
1900	35.7	64.3	52.4	4.1	7.7
1925	36.7	63.3	50.4	5.2	7.7
1950	33.6	66.4	51.19	6.5	8.0
1975	28.9	71.1	54.6	7.9	8.6
2000	21.0	79.0	60.0	9.4	9.6

(a) Including Europe, USSR, Northern America, Australia, New Zealand and Japan.

(b) Excluding the Asian portion of U.S.S.R. and Japan.

(c) Enumerated or estimated, 1900-1950; projected 1975 and 2000, high estimates.

The preceding table forebodes a gloomy picture for the world as a whole and developing countries in particular if we see the increase in numbers that might take place by 2000 A.D. or during the 20th century. It is clear that the developing countries are on the losing side and strenuous efforts are to be put forth by them to stem the approaching tide of 'misery' and 'vice' as Malthus called it by putting a brake to their increasing population.

Some of the aweful conclusions of the preceding table are:

(1) Between 1900—2000 the world population will increase more than four times and by the end of the present century it will reach the figure of seven billion.

(2) During the century under question the population of the developing countries taken together will increase five and half times.

(3) Greatest percentage increase will be in Latin America which will have by 2000 A.D. more than ten times their population in 1900. This will be followed by an increase of more than five times in Asia.

(4) The forecasts for the last 'quarter of the century, are still more disheartening. It is expected that during that span of time the population of developing countries will nearly double itself.

While examining the case of South-East Asian countries Gunnar Myrdal writes: "By now, it is commonly recognised that all countries in the region have entered a critical phase of sharply accelerated population growth, and that the prospects for successful economic development are crucially related to population trends. The recent years have been witnessing a veritable demographic revolution, the pace and dimensions of which are without precedent anywhere in the world." (47)

Gunnar Myrdal further claims that this population explosion was not foreseen by the experts until recently and the main reason was that they believed mortality could not improve until levels of living did and there was no cause to think that incomes and levels of living for the people in the South Asian countries have risen substantially.

We know very little about world population growth before 1650. There was almost total ignorance regarding the rate of population growth in practically all parts of the world. Even in 1800 only a few countries had reliable data regarding the size of their populations. It is doubtless that during 1650—1800, industry, transport and communication had increasingly important effects on the West.

According to Thompson and Lewis, Asia recorded the highest rate of growth between 1650 and 1750—about 45 per cent or slightly under four persons per 1,000—while Europe's rate was 40 per cent. But in the next fifty years there was a shift in the rate of growth and Europe had a rate of growth of six per 1,000 per year as against Asia's rate of five persons per 1,000 per year during the same period. (61)

The period between 1800—1850 saw a great spurt in the population of the West, mainly Europe. This was because the death rate was gradually declining and better economic conditions prevailed which, however, maintained the birth rate nearly stationary. Carr-Saunder's estimates show that in the entire area of European settlement the population grew by 53 per cent during this period or somewhat less than 10 per 1,000 per year. On the other hand, in the remainder of the world the total increase was only about 25 per cent and the annual rate was about one-half as large as in the area of European settlement. (61)

During the fifty years between 1850—1900 Europe realised that population growth could be controlled by controlling both birth rate and death rate. As a result Europe's population (excluding the Asiatic Possessions of Russia) increased by about 51 per cent, a little less than 7.5 persons per 1,000 per year during the half century 1850—1900. The population in the area of European settlements, (including Latin America) increased by about 69 per cent, or a little less than 11 persons per 1,000 per year. The increase in the remainder of the world, i.e., all except the area of European settlement, was about 30 per cent, or less than one-half as much. (61)

By 1930 it was evident that the pattern of world population growth was undergoing a definite change. The Western countries which were enjoying fully the advantages of agricultural and industrial revolutions and were deriving benefits from advanced science and technology, the death rate was rapidly falling along with birth rate and the gap between the two had become narrower. The decline in the death rate in most of the countries of the West was truly amazing. Even in the countries having crude death rates as low as 16 to 18 per 1,000 in 1900, there was still further decline. Nevertheless, the birth rates too showed a similar decline and the growth of population in these countries was held in check. World War I also contributed partially towards this phenomenon.

On the other hand, the death rates in a few non-European countries also began to decline, as the benefits of new knowledge began to spread there. Since there were no signs that the birth rates of these countries had yet begun to decline in the same proportion, it was expected that the impact of steeply declining death rates would only cause a rapid and unprecedented increase in their population—a population explosion.

In other countries of the world which were away from the contact of the West, the birth as well as death rates flourished as in previous centuries with small additions to their populations.

Thus there were during the period 1900—1930 three sets of countries having three different patterns of population growth, demographically occupying all the three stages of demographic transition.

It is clear from the above discussion that by about 1930 the control of most of the infectious diseases took place in much less time in the countries of the world still having high death rates than it had in Europe and in most European settlements. By about the same time the health services too in some of the developing countries were becoming more effective, while they were improving in efficiency in the more industrialised countries.

The introduction of sulfa drugs in the middle of 1930 brought down the death rate of the Western world still further. The developing countries were not in a position to make much use of the sulfa drugs until during or after World War II.

In the 1940s, another drug known as "antibiotics" came into wide use. These two 'miracle drugs' decreased the incidence of deaths caused by infections and brought down the death rate to a new low point in the developed countries of the world.

The development and use of new insecticide—DDT, as well as the growth of preventive medicine—the immunization of individual against the attack of a particular disease like small-pox, typhoid, yellow fever, cholera, plague, tuberculosis, blood transfusion facilities etc. helped considerably in reducing the death rate throughout the world.

"Although the stage was set for a rapid spread of the control of many of the infectious diseases in underdeveloped countries even before World War II, the new drugs and sprays then acquired and the experience in their use gained under the emergency conditions of war greatly expedited the decline of the death rate in the less-developed countries of the world." (61)

The effect of these developments on the death rates of some selected Asian countries were as follows:

In India, the most populous developing country where the reduction of the death rate by 6 or 7 points per thousand, probably from about 30 in the decade 1941-51 to a range of perhaps 21 to 24 in the decade 1951-61, must be regarded as one of the greatest achievements.

Sri Lanka's death rate in 1939 was 21.7; by 1959 it had fallen to 9.1. Taiwan's death rate in 1939 was 20.1 and by 1960 it had dropped to 6.9.

On the other hand, it is regretting to note that the birth rates in many of these developing countries remained stagnant at their old level. At present, therefore, they have rates of growth ranging from two to four per cent per year, which if continue, would double their population in from 35 to 24 years.

"The rate of growth in the world rose from 1.6 per cent (1950-1956) to 1.8 per cent for the entire decade 1950-1960" (61) This means an increase in birth-rate during 1956-1960—a period of four years. During the period 1950-1960 "the rates of population growth in the underdeveloped countries were everywhere above those of the more developed countries and were rising in most of the former". (61)

The crude birth rates in the developing countries during 1956-1960 were, on the whole, well above 40 per 1,000, while they were ranging between 20 to 24 per 1,000 in the developed countries. The death rates in most of the developing countries, by 1960 were still high as per Western standards. The decline in the death rate, which was achieved by many Western countries in a period of 100 years, most of the developing countries have reached in about by 1960 i.e., a few years since the World War II and the remaining countries will achieve the same in one or two decades.

Experts and demographers feel that the world population will grow by about two per cent per year during the coming few decades. If this trend continues, then the world population will double itself every 35 years. The problem of feeding, clothing, sheltering and giving them the minimum necessities of life will be enormous. The developing countries with scarce resources and undeveloped economic structure will be hard hit and will have to struggle in order to maintain even the existing standards of living which are far from satisfactory. The increase of population in these countries, it is dreaded, might even raise the mortality rate again and nullify to some extent our achievements in increased longevity.

Gunnar Myrdal writing about the South-East Asian countries where population pressure is the greatest says:

> At this point we meet the demographer's dictum that, in the long run, deaths and births must again approach balance if fertility cannot be adjusted downward to the new levels of mortality, mortality must rise again at some future time. . . This will happen sooner in the larger, more populous, and poorer parts of the region, which weigh heaviest in every over-all analysis. It is also assumed that, once incomes and levels of living have begun to fall, mortality will at some point lose its autonomous character. The Malthusian checks will then again come progressively into operation, what the application of modern medical research has accomplished, in other words, is merely to

> make these checks inoperative except at income and living levels much lower even than those now prevailing. (47)

This is a gloomy but factual expression of truth. The world must avoid this danger!

The situation is rendered serious by the very fact that the developing countries of the world which are in need of galvanising more resources for their economic and social development, in order to give their populations a reasonable standard of living are, in fact, over-burdened with more numbers than they can actually afford to accommodate.

The situation is tense in Asia, especially in South-East Asia where independence of many countries in the late forties and fifties had raised aspirations of the people towards a better economic future. The sense of frustration and despair prevailing among them now has rendered their economic betterment a dream yet to be realised.

The demographic distribution today is far from satisfactory. Half the world's population is crowded in just five countries: China, India, U.S.S.R., U.S.A. and Pakistan.

India and China have together 1,638 million people or slightly more than 37 per cent of the world population of 4.4 billion. India's population is about one-fourth of Asia's population and the latter is two-thirds of world population. (40)

The responsibility, in this respect, rests on these two countries—India and China—which should take active leadership to ease this terrific problem of population growth in the interests of world welfare and peace. The Pearson Commission Report aptly said that "no other phenomenon casts a darker shadow over the prospects for international development than the staggering growth of population." (40)

In advanced countries birth rate has stabilized around 25 births per 1,000 per year. In less affluent countries of Asia, Africa and Latin America it is still between 35 to 50 per 1,000 per year. The rate of natural increase thus ranges from 2.2 per cent to over four per cent per year. If the trend continues the very existence of these countries will be at stake. It is high time that the governments in the developing countries realise the gravity of the situation and the magnitude of the population problem and take active measures by mustering all courage and public opinion in favour of decreasing birth rate and the acceptance of the small family norm as a way of life.

How serious the problem is can very well be judged from the following quotation from an unofficial report: "A child born today living through the seventies would know a world of 1,500 crores of people. His grandson will share this planet with 6,000 crores of people. In six and a half centuries from now, there will be one human being standing on every square foot of land on the earth, unless we are able to achieve our aim of reducing the birth rate of 40 per 1,000 to 32 by 1974 and to 25 ultimately." (8)

Some Consequences of Population Growth

It is seen by now that the developing countries which are in the process of expansion of their economies are passing through critical times because of population explosions they have been witnessing during the past two decades.

Their main preoccupation has been to feed the growing numbers and try to maintain at least that standard of living which they were enjoying so far. It is to be seen whether these countries are in a position to satisfy even this minimum requirement.

The food problem is intimately connected with the population growth. There is little point in speculating as to what size of population the world can support in the next few decades because no such entity as 'World Food Supply' exists at the present time. The countries with large food surplus are those affluent countries where population problem as such does not exist. It is easy to rouse the sympathy of these surplus countries in favour of those which need it only in times of some calamities like famines, floods, etc., but it is not an easy task to secure from them continuous assistance to bridge the nutritional deficiencies of the needy countries which are mostly developing ones. The barriers of nationalism are still too strong to permit an easy mobility of food surplus in favour of needy and poorer countries.

Moreover, there is no guarantee that if the total world food production is pooled together and doled out on a per capita basis, it would be sufficient to supply an adequate diet to all the people in the world. However, Lester Brown, President of Worldwatch Institute, Washington remarks that if world population were now growing at one per cent instead of nearly two per cent, there would still be ample margin for improving diets.

Thomson and Lewis calculate that "at five bushels per person this allows a little less than one pound per person per day, or about 1,800 calories. An average person would need 2,200 to 2,500 calories to ensure a reasonable adequate energy-producing diet. In addition, some vitamins, animal proteins, amino acids, and other food ingredients are needed."

They further state that at the rate of five bushels per person the requirements per 45 million population which is the annual addition to the population of underdeveloped countries, the foodgrains needed would be 225 million bushels per year. "In ten years these peoples would need an increase in the foodgrains alone amounting to about twice the annual production of wheat in the United States in a good wheat year." (61)

On the other hand, with an annual rate of population growth of two to four per cent in most of the developing countries, the question arises whether they are in a position to increase their food production by that percentage at least to maintain the existing standards of living. The answer is doubtful. Besides, most of the capital needed for rapid expansion of industry and agriculture must come from agricultural surplus, at least for a few decades and when no surpluses are available the economic growth is stunted.

It is estimated by U.S. Department of Agriculture that Third World countries will have to import 31 million tonnes of food in 1985—an increase of three per cent—simply to keep their hunger problem in check at a level far below accepted nutrition needs. (76)

The food supply to needy countries and their economic development is essentially not an international problem, but a national one and should be solved internally by the country cencerned. International aids may be used by them carefully in their development processes but reliance on their own resources is the only and the surest way of their success, for the boundaries of nationalism and the conflict of economic ideologies have become so powerful that developing countries find themselves in the doldrums. Despite the above fact Mr. Rafael Sales, Executive Director of U.N. Fund for Population Activities (UNFPA) acknowledged that despite declining birth rates, the population problem is far from over. "It will not be solved without the commitment of the whole international community over the next 70 years." (76)

A study conducted by the Food and Agriculture Organisation (F.A.O.) underlines the fragile food situation in many countries. FAO had projected that about 65 countries may not be able to feed their population. "Even if all the land were formed at subsistence level there would be barely enough food to support the number of people these countries anticipated by the end of the century." (76)

Currently, farmers must produce enough additional food each year to feed an annual increment of 79 million people. Scarcity of new lands, continuing loss of topsoil because of of erosion and other facts, diminishing returns on chemical fertilisers, all this make expanding food production progressively less easy. Therefore, Mr. Brown warns: "Until the rate of world population growth slows enough to begin reducing the annual increment, improvement in the human condition will be threatened." (76)

The already serious plight of these countries has been rendered more gloomy by the accelerating growth of their population at a rate ranging from two to four per cent. There is every reason to believe that this rate of growth is not peculiar to these countries only. The developed countries too had at some time in their recent history birth rates higher than those prevalent today in the developing countries of the world but their conditions were different, in the sense that they had developing economies and the decrease in their death rates was spread over a period of 100 years; unlike in the developing countries where there has been a dramatic fall in the last two decades only.

The developed countries like England and Japan could maintain their populations owing to their prosperous trade resulting from the industrialization of their countries. On the other hand, the developing countries have nothing to offer in the world trade because of absence of much industrial exports and growing competition from the advanced countries in the world market. The only things they can export are the raw materials for which prices are unstable and notoriously fluctuating.

The absence of capital, because of lack of savings in the developing countries owing to large consumption in view of increasing numbers, acts as a set-back for the industrial development of these countries and consequently pressure on agriculture increases resulting in low savings.

Huge additions to their labour force without opportunities of being employed in gainful jobs have created a serious unemployment problem in these countries and a sense of frustration among the youth. With the increasing population the dependency ratio will rise still further. Taking the example of India we note that the percentage of children below fifteen years of age in 1961 was about 41 per cent, it has shown a further rise to 42 per cent in 1971. In affluent countries the percentage is 25 to 30.

These considerations raise serious doubts about the future of the developing countries where birth rates are high and death rates are falling. According to experts the death rates in these countries will not fall as low as in developed countries as they will lose their "autonomous" nature in the developing countries and will tend to rise in a few decades, if they are unable to maintain the standards of living they are enjoying today.

The developing countries are, therefore, in a dilemma. Their chances to come out of this serious situation are limited. The only way for them to solve the problem of increasing mumbers is to control the birth rate from its present level of 40 per 1000 to 25 per 1000 in a few years to come. This is a colossal task. The miracle was accomplished only in one country of the world—Japan—where the decline of the birth rate proceeded very rapidly after 1949, falling from 33 per thousand in that year to 20 in 1954 and 17.5 in 1959 i.e. a little less than 50 per cent in a decade. (55) However, it is a fact that by 1930 Japan had become highly industrialized and urbanized.

Such drastic changes cannot be expected in the developing countries as things stand today, but sooner or later they will have to tread the path of developing countries by controlling their reproductive behaviour, in favour of decreasing birth rates and adoption of small family norm.

Development is our obsession in our quest to secure quality of life for our people. At the present time seven countries in Europe i.e., Austria, Belgium, East Germany, Luxemberg, Sweden, United Kingdom and West Germany have succeeded in stabilizing their populations. In Asia, none except Singapore and Japan are nearing stabilization, that is, zero population growth which should be an ideal situation for all the remaining countries of the world to imitate.

2

Indian Population Situation

Population Explosion in India

The growth of population in the third quarter of the present century, in the developing countries of the world, has posed before them serious problems which have affected greatly their economic, social and even cultural standards. India is one such country.

Since Independence, in 1947, India has been witnessing a veritable demographic revolution unprecedented in the long history of the country. This is not an exclusive feature of our country but has been a common characteristic of most of the Asian and especially South-Asian countries which are in the process of economic development. Obviously the impact of this escalating population growth on their national economies has been quite adverse.

India is in a critical position today as regards the problem of her growing numbers. India's population has always grown from decade to decade but its growth was not so menacing as it is today.

Looking back nearly four countries when population census on modern lines was non-existent, it is estimated that the population of India "in the 16th century was around 100 million (10 crores)." (55) Thompson and Lewis are of the opinion that between 1650-1800 conditions in India were not quite favourable to a considerable population growth because of political instability. They further add: "Civil strife, with the consequent insecurity of life and property, the stagnation of agriculture, arbitrary taxation, and personal government, have always had an unfavourable effect on the death rate. . . . Hence it appears likely that India's population grew very slowly, if at all, during much of this period." (61)

From 1872 when census taking began in India fairly reliable population statistics are at hand. The table below summarises the position since 1891.

TABLE 2

Growth of India's Population
1891-1981

(in millions)

Year	*Population*	*Decadal Growth*
1891	235.9	
1901	238.3	2.4
1911	252.1	13.8
1921	251.4	−0.7
1931	279.0	27.6
1941	318.7	39.7
1951	361.1	42.4
1961	439.2	78.1
1971	547.4	108.2
1981	683.8	136.4

The above table illustrates clearly that India's population was growing at a very slow rate upto 1921 but it started gathering momentum from that year; 1921 is therefore, described by demographers as the year of "big divide." However, it is noted from the table above that the population growth was even negative during the decade 1911-1921. This is obviously due to the influenza epidemic in 1918 which took a heavy toll of 15 million lives. (1)

Similarly, no appreciable increase in the population is seen in the decade 1941-1951, the main reason being the partition of the country in 1947.

A critical analysis of the preceding table shows that the growth of population of India was rather slow between 1891-1921—a period of 30 years. In this period population actually grew by 15.5 million only compared with the increase in the succeeding decade 1921-31, of 27.6 million, or more than one and half times. The year 1921 thus stands as a turning point in the history of population rise in this country which sowed the seeds of future phenomenal and accelerating growth we are witnessing today.

Further analysis suggests that from 1921 to 1951 the actual growth was as much as 109.7 million which is nearly equal to the population addition of 108.2 million in a single decade of 1961-71.

Experts on the subject had come up with even more startling figures for the decade 1971-1981, when they said "During the next years i.e. between 1971 and 1981 population growth would be 16.5 crores and the total population would reach 73 crores (730 million)." (55) But the figures for 1981 indicate slight slowing down in population.

These comparisons help us to judge accurately the magnitude of India's population problem and its explosive character in view of the fact that it acts as a hurdle in the socio-economic progress of the country.

Different sets of projects have been worked out about the future growth of India's population. Indeed, there are innumerable pitfalls in forecasting the population of a country as they are based on a number of assumptions regarding future trends in birth and death rates which many a time may be away from reality, as Joseph S. Davis rightly pointed out ". . . . Population forecasting is not a simple matter. Available techniques do not permit reliable predictions to be made 5, 10, 20 and 50 years ahead." (2)

In 1958 the Population Division of the United Nations estimated that the population of India would be 417 million in 1961, 504 million in 1971 and 666 million in 1981. This was based on growth rates which rose from average annual rate of 1.5 for the period from 1950-55 to 2.5 for 1975-80. (2)

These estimates, however, did not prove hundred per cent correct, as it is quite natural with populations, and in 1968 the

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United Nations prepared another series of year-wise projections for India. According to these India's population would be:

TABLE 2.1

Projected Population (1970-85)

(in million)

Year	*Population*
1970	555
1971	570
1975	633
1980	717
1981	735
1985	808

It is worthy of note that according to 1971 and 1981 censuses India's population stood at about 547 and 683 millions i.e. less than the United Nations' estimates for the years which were on the higher side. However, the population picture is not very encouraging. Thus General William H. Draper, National Chairman of the Population Crisis Committee observed some years back: "India's population today is probably 555 million people, rather than the 500 million officially estimated. The rate of India's population growth was almost three per cent each year, rather than two and a half per cent reported. Drastic action is needed to cut the birth rate to half. India's problem of population is the 'super problem' of the world."(55)

The working Group appointed by the Planning Commission regarding population education had come to the conclusion that the population of India will rise to 900 million by the end of this century and it may reach a formidable figure of 1,200 million by the year 2050 before stabilization. (59)

The underestimation of our birth rate in the past has, to some extent, upset the targets which we were to achieve in our development plans. In 1951 when the First Five Year Plan came into operation it was believed that the population of India would grow at the rate of 1.25 per cent per year. The Second Five Year Plan was also based on the assumption that India's birth rate was 1.25 per cent per annum. The Planning Commission visualised that the birth rate of 1.25 per cent per year would prevail throughout the decade from 1951 to 1961 and would rise to 1.33 per cent per annum during the decade 1961 to 1971. Subsequent events, however, have proved that these plans were based on gross underestimates of birth rate. S.N. Agarwal claims that "during the period 1951-1961, the average rate of population growth was about 2.15 per cent per annum, and it was round 2.5 per cent in 1961." (2)

During the ten years 1961-1971, India's population increased by 108 millions, giving a rate of growth of 2.45 per cent per annum as against 2.16 in the previous decade. "United Nations experts have estimated that India's population by the turn of this century will be about 1000 million when the world will have about 6500 million people. In other words by 2000 A.D. roughly every sixth man in the world will be an Indian." (45) The implications of this uncontrolled growth and its effects on national economy and socio-economic structure of the country can very well be imagined.

The magnitude of the population problem of India can very well be judged from the fact that India has only 2.4 per cent of the earth's area but 15 per cent of world population of about 4500 million. Likewise in 1975 she had 26.5 per cent of Asia's population of 2300 million, which at that time was 57 per cent of the world total of about 4000 million. (59)

Population of India is greater than the population of Europe. India's population is equal in size to the population of the U.S.A., the U.S.S.R., and Japan put together.

It is not our intention here to prove or disprove the fact whether India is over-populated or not. Nor are we relying on Cannan's theory of 'optimum' population. However, note should be taken that our population is increasing from decade to decade at a phenomenal and terrific rate resulting in more sharers of the national pie, which in turn is increasing at a very low speed.

We shall see subsequently the effects of this ever-increasing population on our economic development nullifying our achievements in the post-independence period.

One of the substantial achievements of the last thirty-five years has been the sharply declining death rate. Declining death rate is regarded in European countries as a sign of well-being of a nation. Let us also consider this as a healthy feature of our national life. We cannot be in agreement with Julian Huxley when he wrote: "The Indian mortality rate could doubtless be reduced by half, but what would you do with the increased population? Have you done any good by causing more babies to live and so creating greater population-pressure or by opening up new lands to be filled at once by the human flood?" (47) This was an argument against health reforms which is not tenable in the world today, when we are bent upon decreasing the death rate still further.

Population growth is a complex problem but its main components are birth rate and the death rate. Under Indian conditions migration seems to have little effect on our population increase. Hence we are to concentrate only on the other two variables, namely, the birth and the death rate, the dynamics of which affects our population growth.

Causes of Population growth in India

Basically, population trends of any country are conditioned by the interaction of three determinants—fertility, mortality and migration. Migration, however, as a factor determining population dynamics has lost that influence which it had in the earlier centuries. Under Indian conditions too, migration as a determinant of population growth in the country is quite insignificant. Hence, attention is to be focused only on the remaining determinants, namely the birth rate and the death rate.

The following table gives the birth and death rates for India from 1901 to 1980.

It is observed from the table that in a period of 80 years the birth rate in India has gone down by 12.2 points, whereas the death rate declined sharply by 28.6 points during the same period.

It is also to be noted that before the year of the 'big divide'

TABLE 2.2

Birth & Death Rates and Population Growth in India 1901-1980

Year	*Birth Rate per 1000—Estimated*	*Death Rate per 1000—Estimated*	*Growth*
1901—1910	49.2	42.6	6.6
1911—1920	48.1	47.2	0.9
1921—1930	46.4	36.3	10.1
1931—1940	45.2	31.2	14.0
1941—1950	39.9	27.4	12.5
1951—1960	41.7	22.8	18.9
1961—1970	41.1	18.9	22.2
1971—1980	37.0	14.0	23.0

i.e., 1921, the death rate was nearly equal to the prevailing birth rate; and consequently the population grew very little before that year. But since 1921 the gap between the birth and the death rates became wider and wider from decade to decade, resulting in greater additions to the existing population. A rising trend in population is seen from the decade 1921-1930 but it has been accelerated further from 1951-1960 when the death rate sharply came down to 22.8 only, while the birth rate maintained itself more or less static at 41.7.

What has happened in India during the past fifty years or so is also true of other developing countries in Asia. Thus Gunnar Myrdal, writing about South-East Asian countries, says: "In South Asia, the long-run trend has been toward a gradually widening gap and culminated in a 'demographic explosion.' The fall in South-Asian death rates was slow and uneven till the middle of the 1940s when an unprecedented decline began, which caused an increasing imbalance between births and deaths and a sharp acceleration in natural population growth. The 'demographic transition,' sometimes called the 'population cycle' which would restore a near-balance between births and deaths, is not in sight in any of the South Asian countries." (47)

The developing countries are trying hard to establish the correct balance between births and deaths but their attempts in doing so have achieved only a limited success. This is true also in the case of India.

The balance between births and deaths in India, prior to 1921 had been maintained by Malthusian checks of famines, wars and epidemics. "The growth of India's population shows a very close relation between the intensity of food shortages and the violence of epidemics, on the one hand, and the growth of population on the other hand." (61)

From the decade 1921-1931 the effects of positive checks in India have been increasingly moderated. "The ravages of famine have been largely eliminated by the improvements of transport and by better political and economic organization for famine relief. Rather large reclamation projects and some modest improvements in agricultural practices have also contributed to a large and more certain food supply." (61)

Allied to this, the control of epidemic and endemic diseases like malaria, improvements in drinking water facilities, improved drainage, increase in medical and health facilities, knowledge of preventive medicines, increased blood transfusion facilities, introduction of sulpha drugs and antibiotics and use of DDT, all these discoveries and inventions, besides organization of effective and efficient health services upto the taluka level and the extension programme to the village through the Community Development Programme, led to a decline in death rate in India. The decline was rather slow in the beginning but gathered momentum during the last 40 years which brought down the death rate from 42.6 in 1901-1910 to 31.2 in 1931-1940 and still to 14.0 by 1971-80.

Falling death rates were regarded in Europe as signs of wellbeing of a nation. This statement cannot be applied totally to the developing countries including India for a variety of reasons. The death rate in the developed countries of the world which had begun to fall after about 1800, continued to fall during this half century at a somewhat more rapid rate than before 1850. ". . . . crude death rates in the more economically developed Western countries fell in widely varying amounts, from round 24 to 22 in 1850 to 20 to 16 per 1000 by 1900. In a number of countries, however, death rates of 16 to 18 per 1000 had been attained by that time." (61)

The fall in death rates in the more developed countries of the world was spread, therefore, over a long period of more than a hundred years and thus it was a gradual process. On the other hand, the decline in death rates in less developed countries of the world occurred hardly in a period of less than twenty-five years.

Secondly, in more developed countries the death rates came down because of various reasons like efficient organization of health and medical services, discovery of new drugs, better means of sanitation etc., but the most important reason was the rise in standards of living of the people in these countries, consequent on industrial and agricultural revolutions, urbanization, modernization and spread of education. All this helped in giving them a new outlook to life and increased their living span. According to Harold F. Dorn, "Around 1700, the expectation of life at birth of the white population of North America and of Western Europe was about thirty-three years and probably had increased very little during the preceding three or four centuries. In 1950, the expectation of life at birth of the white population of the United States was sixty-nine years, an increase of more than 100 per cent." (33)

So, in the developed countries, the rise in standard of living which led to better dietary and nutritional systems, besides the other measures noted above had some bearing on people's health and indirectly helped to produce gradual effects on the death rates of these countries.

On the other hand, the steep decrease in death rates has no relationship whatsoever in developing countries with the standard of living of the people which is rather low and far from satisfactory. The declining death rates in these countries are wholly the result of application of modern medical and health facilities and improved means of transport and communication which have prevented the occurrence of terrible famines by facilitating easy mobility of food supplies to famine-stricken areas.

Writers like Thompson and Lewis believe that improved health services in developing countries have restricted effect in sloping down the death rates. The per capita supply of necessities sets the lowest limit towards a further decline. "If the per capita supply of necessities should decrease by any appreciable degree, the death rate will almost certainly increase in most of them in spite of better health services." (61)

Birth Rate in India

It is a healthy sign that the death rate in India, as in other developing countries, is decreasing fast. However, in India which is in the process of economic development, the other variable of population growth i.e., birth rate shows no sign of similar decline.

The demographic revolution in India which may be claimed to have been started by 1921 and gathered strong momentum in the fifties is characterized by an unprecedented growth of population caused by the ever-widening gap between falling death rates and nearly static birth rates. India is said to be now in the second stage of 'demographic transition' and is struggling hard to get over it, making strenuous efforts to curb her birth rate of 39 per 1000 population to 25 per 1000 in a decade. It has been made quite clear above that the birth rate was around 49.2 per 1000 in the first decade of this century. It slowly declined to 45.2 in 1931-41. The birth rate further dropped to 41 per 1000 between 1961-66. "During 1967-68 and 1970-71 between one and a quarter million births are believed to have been averted each year as a result of the family planning activities. As a result, the birth rate declined by two points and came down from 41 to 39." (2)

The table 2.2 illustrates also that from 1901 to 1980 while the death rate declined steeply by 67.2 per cent, the birth rate hardly came down by 25 per cent. This is, therefore, the crux of the whole population problem of India. The population growth may be described as the basic problem of the Indian economy and a great handicap in our national progress. Increasing population is no longer viewed as a source of national strength. The qualitative aspect of population matters more than its quantitative aspect. The gravity of India's population problem can be judged from the words of our late Prime Minister, Pandit Nehru: "The danger to our country from population rise is worse than the danger of Chinese aggression." (55)

Hence, the main cause of population growth in India is the wide gap between high birth rate and declining death rate. Low death rate by itself is a healthy sign but when it is matched by proportionally falling birth rate, no big additions are made to the existing population and the enhancement of the standard of living becomes an easy task to accomplish. Static birth rate in India, in spite of our best efforts in all directions, has proved to be a hindrance to our nation's progress. The growth of population has created many economic and social problems which have shattered all our dreams of achieving a reasonable standard of living. We shall see later the consequences of an uncontrolled growth of population.

Meanwhile, we shall discuss in brief the main causes of our stationary birth rate which has become a concern and worry for our economists, social scientists and planners. We have already mentioned that the developed countries of the world have also passed through the same stage of growing population during the 18th and some part of the 19th centuries. However, it is also a fact that higher aspirations of the people allied with their craving for a better standard of living acted as a curb on their growing numbers.

Developing countries like India are now in the second stage of demographic transition with the difference that India's growing population is, at present, acting as a neutralizing factor or rather as a check on her economic development and this has negated the benefits which the development plans could bring to the people. The causes of high birth rate and its reluctance to decline may be attributed to the following factors:

(i) *Early Marriage*: India is one of the few countries where marriage takes place at an early age. The incidence of child marriages decreased after the passing of the Child Marriage Restraint Act in 1929, commonly known as Sarda Act after the name of its sponsor Mr. Harbilas Sarda. By this act, the minimum age limit was raised to 14 years for girls and 18 years for boys. The Act came into force on April 1, 1930. The decade following the Sarda Act marks a significant rise in the mean age at marriage of females in India. The Act was amended in 1949 to raise the minimum age of males to 18 years and for females to 15 years. The National Policy on Population announced by the Government in 1976 to curb the growth of population has enhanced the age to 18 years for females and 21 years for males. (59) The table which follows shows the progress of mean age of marriage in India between 1891-1971.

TABLE 2.3

Mean Age at Marriage 1891-1971

Years	*1891*	*1901*	*1911*	*1921*	*1931*	*1941*	*1951*	*1961*	*1971*
Males	19.55	20.01	20.26	20.69	18.62	19.91	19.89	21.59	22.3
Females	12.54	13.14	13.16	13.67	12.69	14.69	15.59	15.83	17.0

The table shows that in a period of 80 years female age at marriage increased by 4.52 years and that of males by 2.81 years or an average increase of 0.56 years for females and 0.35 for males, every ten years.

The mean age at marriage of females has a direct bearing on the birth rate, in the sense that when the age at marriage is low the females will begin to bear children early and their reproductive span is larger. S.N. Agarwala says that "it has been calculated that an increase in the mean age at marriage of females by 3.0 years during the period 1891-1901 to 1951-61 in India has resulted in a 3-4 per cent decline in birth rate over the period." (2)

In our country, Mahatma Gandhi was against early marriages. He wrote in *Young India* that child marriage was a source of appalling child mortality and still-birth that prevailed in our society.

A comparative table of mean age at marriage of some selected countries has been given below:

TABLE 2.4

Mean Age at Marriage of some selected Countries

Countries	*Men*	*Women*
Sri Lanka	26.1	20.0
India	22.2	16.2
Israel	26.4	22.1
Japan	25.8	23.1
Malaysia	23.9	18.2
Philippines	24.1	21.1
Singapore	25.8	21.1
Thailand	23.7	20.0
Turkey	23.3	19.5
U.A.R.	25.2	19.4

It will be noted from the above table that the mean age at marriage of women and men in India is the lowest among the countries represented in the table. As it has already been stated the mean age at marriage is a very influential factor responsible for the high rate of birth in India. "It has been estimated by demographers that if the female age at marriage is raised to 20 the birth rate would decline by about 20 to 25 per cent." (55)

(ii) *Remarriage of widows*: This is one more pro-natality factor influencing the growth of India's population. The social sanction against the remarriage of widows in India is a thing of the past. Legislation permitting the remarriage of widows was passed in India as early as 1896. But the feeling that society entertained against the remarriage of widows did not change till recently. According to Dr. Chandra Sekhar "there are about 24 million widows of all ages (including 'virgin widows') who normally do not marry. Even widowers do not marry widows as a rule. But India is fast changing and, of late, there are some men who are willing to marry eligible and unencumbered widows. This welcome modern trend which negates the traditional custom of banning widow remarriages and withdrawing these women from participating in reproduction is contributing its small share to the population problem." (5)

Some studies conducted in rural parts of the country establish that nearly 25 per cent of those who get widowed are remarried. There are more chances of widow remarriage before the age of 20 and when they have no children. Few women who get widowed after the age of 30, are re-married. (2)

Being drawn into the reproduction field they too contribute their share to the growth of our country's population. Widows however have a right for re-marriage just as any other individual has. Only because widow re-marriage has somewhat unfavourable influence on our increasing numbers, it is inhuman to think that the old ban on widow remarriage should continue.

"It has been found that because of widowhood, a married woman has an average of one-half to one child less during her reproductive period. For example, it was found in Kerala that while females with unbroken marriages had 6.6 children by the time they completed their reproductive period, those widowed had only 5.5 children. In Madhya Pradesh the difference was only 0.5 child and in Mysore, one child in the urban areas and 0.5 child in the rural areas." (2)

However, there is no great reason to worry on the point that widow remarriage will raise the birth rate in the country, because "over 90 per cent of women in ages of 20 to 35, where birth rate is high, are even now married. The effect of greater widow remarriages would be to increase the percentage of married women in those ages where the birth rate is quite low. The total effect on the crude birth rate is not likely to be much." (30)

The trend in mean age at widowhood in India is towards an increase. This can be seen from the following table.

The decline in the mean age at widowhood in the decades 1911-21 and 1931-41 is obviously due to the following reasons: (1) during the decade 1911-21 i.e. in 1918 there was the

TABLE 2.5

Mean Age at Widowhood of Those Getting Widowed By Age 45, India, 1901-11 to 1951-61 Decade Synthetic Cohort

	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61
INDIA	31.2	29.8	34.1	28.8	33.2	34.0

influenza epidemic which took a heavy toll of lives; (2) the decrease during 1931-41 may be attributed to the large number of child marriages which took place before the enforcement of the Sarda Act. The recent increase in mean widowhood age from 1941 is because of improvement in male mortality.

Increase in the mean age of widowhood or widowerhood implies indirectly a helping hand towards the growth of India's population. But at the same time it shows clearly any increased longevity owing to improved health and medical facilities and thus it may be called a mixed blessing.

(iii) *Duration of Fertile Union*: Fertile union begins with the age of effective marriage and it continues upto the death, separation or with the crossing of the maximum fertile age which is taken as 50 years. In India, when the marriages were taking place at an early age the cohabitation did not start immediately after the marriage. There is another ceremony known as 'gauna' or 'vida' which is the beginning of effective married life.

The mean duration of fertile union in India has increased from 20 years in 1901-1911 to 25.9 years in 1951-1961. (1) With the increase in longevity of Indian people it is expected that there will be a further rise in the mean duration of fertile union.

Fertility of women is an important factor affecting reproduction and consequently increase in population. According to Prof. Visaria the general fertility rate should be reduced drastically. He writes: "consequently, provided that the general fertility rate (i.e. the number of births per thousand women in the reproductive age group 15 to 44) can be reduced to 50 per cent from its level during 1951-66, the population of India would approach 75 crores by 1986. If the 1951-65 level of fertility remains unchanged, the population would exceed 75 crores by 1981 itself." (45)

In this connection it will be pertinent to consider what is known as 'age specific birth rates' per married woman. A more refined measure is obtained when we consider only married women between 15-44 years, for in India this is the period when reproduction mostly takes place.

Age specific birth rate can give us even a better picture than the general fertility rate of women, if their reproductive capacity span from 15-44 is divided into shorter periods.

The following table will be of interest in regard to age specific birth rates in India, compared to those in U.S.A.

TABLE 2.6

Age Composition of Married Women Aged 15-44 and Their Birth Rate in India and U.S.A.

Age	*INDIA (1961) Nnmber of Married Women per 1000 aged 15-44*	*Birth rate*	*U.S.A. (1960) Number of Married Women per 1000 aged 15-44*	*Birth Rate*
15—19	152	239	40	375
20—24	223	328	148	385
25—29	216	297	185	237
30—34	172	236	210	131
35—39	131	168	220	66
40—44	106	73	197	19
15—44	1000	244	1000	170

The analysis of the above table brings out the following facts:

(1) Considering the whole group 15-44, there are 244 births to 1000 married women in India, whereas it is 170 births in U.S.A.

(2) In India the percentage of married women is the highest in those very ages which have a high birth rate.

(3) In U.S.A., the percentage of married women is the lowest in the age-group 15-19 where birth rate is one of the highest.

(4) In the age groups 20-24 and 25-29 the numbers of married women are lower in U.S.A. than in India but the birth rates in the two countries are nearly equal.

(5) In the age-group after 29 years, the number of married women in U.S.A. is greater than that in India but the birth rates in U.S.A. are much lower.

(iv) *Universality of Marriage*: In India, it is expected that every person should marry. There is social pressure on marriage. These pressures are exercised on both unmarried males and females alike but the pressure on females is rather strong. Dr. Chandrasekhar says "......every one in India sooner or later, usually sooner, gets married. Marriage is not merely a necessary social institution but a quasi-religious duty......spinsters and bachelors are a rare phenomenon in India and nearly every adult male and female in the country participates in reproduction". (5)

This statement is strongly proved by the following statistics. Though the figures relate to the sixties, it seems there has been no extraordinary change in the situation.

TABLE 2.7

Percentage Married in Different Age Groups in India and U.S.A.

Age Group	*Percentage Married in the Age Group* *India (1961)*	 *U.S.A. (1960)*
15—19	69.6	15.1
20—24	91.8	67.2
25—29	94.2	83.4
30—34	91.4	85.9
35—39	87.0	85.4
40—44	77.7	83.3

In India 69.6 per cent of girls marry between 15-19 years, as against only 15.1 per cent in U.S.A.

The fact of universality of marriage in India can be clearly seen from the above figures for age groups 20-24, 25-29 and 30-34. There is a slight decline after 34 years in the age groups 35-39 and 40-44.

In the U.S.A., on the other hand, upto the age of 24 many girls remain unmarried and the percentage of married girls increases from 25 years onwards when the age-specific birth rate shows a tendency to decline.

In India, in spite of legislation prohibiting child marriages from 1929, it is sad to note that the incidence of early marriage is still visible: "According to 1961 Census 80 per cent of girls aged 10-14 years, 30 per cent of those aged 15-19 years and 71 per cent of those aged 20-24 years were unmarried. This means that 20 per cent get married below the age of 15. The bulk gets married at ages 15-19. Roughly, only 7 per cent marry at ages 25 and over." (30)

(v) *Joint Family System*: This system, "reduces or even eliminates the responsibility of bringing up children, for there are one's own parents to look after them and provide for them." (33) Under this system it is advantageous for parents to give birth to children more quickly, while their own parents are alive and active so that these children can be very well looked after and caressed by the old people. Thus parents provide for their economic security in old age at the cost of grand-parents. This is a kind of social insurance against old age, unemployment, etc.

Similarly, the children in the family, brothers and cousins, live in an atmosphere of cordiality and affection and the whole family reacts in adverse as well as in happy circumstances as one man, under the custodian care of the head of the family.

The joint family system had its own advantages as well as disadvantages but it stood as an institution for centuries together. Nowadays, it is fast disappearing because of growing individualistic tendencies which have been caused by industrialization and urbanization, though these two are quite slow processes in India.

But, from the point of view of growth of population the joint family system has acted as a pro-natality factor. S.P. Jain is of the opinion that the joint family system is one of the factors which encouraged child marriage. "There are a number of reasons why Indian society favours child marriage. The most important is joint family system. In this system, women's place is in the home. The bride, when young, easily adjusts to her husband's home and follows the customs and traditions of the new family." (30)

(vi) *Belief in Large Families*: Sixty years back when the incidence of mortality was very high, couples saw safety in large number of children. With the decline in death rate the situation has changed but the norm of high fertility is, however, still prevalent.

No great economic and social changes have so far occurred in India to weaken this belief in large families. In spite of all efforts at industrialization, India continues to be an agricultural country. In Western countries the change towards small family norm has been brought about by increased spread of education and large scale urbanization in which children are not looked upon as an asset beyond certain limits. According to Prof. Jayasuriya, "In a society which practised agriculture of the traditional type, a large number of children was an advantage. Even if a few of them did not survive beyond ten or twelve, they fulfilled at these and younger ages as well, certain functions of economic nature, tending cattle or sheep, or carrying out simple tasks in the fields." (33)

Early marriage is also another important factor contributing to the large family norm. The girls who marry early are mostly uneducated and they do not have the chance to develop a broad and balanced outlook on life and, therefore, thinking over the size of the family can never enter their minds. The decisions are taken by husbands and the poor women have to faithfully comply with their wishes.

In the advanced countries of the world democratic spirit of partnership between men and women has firmly taken roots. Absence of early marriages along with economic freedom for women are at the very roots of emancipation of women in those countries. Margaret Sanger, the pioneer in the field of planned parenthood rightly says: "No woman can call herself free until she can choose whether she will or will not be a mother." (55)

(*vii*) *Preference for sons*: The birth of a male child is always welcome in India. It is expected of the sons to support their parents in old age and also perform all the religious duties of the family and carry on the family name after the death of the father. The greater the number of sons, the bigger will be their addition to family income. The preference is so deep-rooted in the hearts of people that even educated people, though aware of the problem of population growth, will leave aside all their ideas in favour of a son. This feeling is so strong that persons having two or three girls will manifest their dissatisfaction and mostly will not go for family planning methods till they beget a son. Chandrasekhar says ". . . It is bad Hindu manners to expect financial aid from daughters or sons-in-law". (5)

(*viii*) *Low Standard of Living*: This is another important factor which encourages high birth rate in India, as Prof. Jayasuriya says: "when life is lived at the lowest level capable of sustaining it, and the share of food, clothing etc. which each person gets is minimal, an extra mouth to feed or an extra body to clothe is seen in families of low income group as a sharing of existing resources". (33) No thouhgt is given to the quantum of each share which naturally decreases with every new entrant in the family; sharing with others, psychologically, gives them a social pleasure which in part compensates them for the lack of material pleasures. This tendency also develops among them a fatalistic attitude and their belief that everything is pre-determined and that a child is God's gift. "Conditions do not exist for developing an attitude in the people that with small families, it is possible to improve their own lot and ensure a happy life for their children." (30)

It is true that people should have a minimum level of economic and educational standards to enthuse them to view in proper perspective the advantages of limited numbers in a family. This is terribly absent in our country because of our ever increasing numbers. It is, then, a vicious circle. To come out of it, by changing people's attitudes, is not an easy task.

But it will have to be done, at any cost, if we have to ensure a better future for coming generations.

Consequences of a Rapid Population Growth in India

The foregoing discussion has made it evident that the world population is growing at a faster rate than in earlier decades. The developing countries are the main contributors to this phenomenon. India with its 684 million population is still the second most populous country of the world, next to mainland China with its 955 million, and occupies an outstanding place constituting about a seventh or 15 per cent of the world population of about 4500 million.

Malthus, in his times, confronted the rising population with rather slow increasing food supplies and drew the conclusion that in this eternal race the supply of food will fall short. He prophesied "misery and vice" for those countries which did not listen to his advice of 'self-restraint' as a measure of limiting numbers.

In so far as developing countries are concerned the statement of Malthus holds a good deal of truth. We do no longer relate population with food supply only but think, now, in terms of quality of life. But there is no denying the fact that general welfare cannot be attained unless some sound economic base is laid down for every country and the necessities of life, including food, clothing and shelter are guaranteed. Therefore, the present trend is to think of both—quantity as well as quality of population.

Dr. V.K.R.V. Rao rightly said in this respect: "Population should not be treated merely as a quantitative phenomenon or just as essay in numbers. It is the quality of the population that is most relevant both as a factor of growth and an end-product of growth and numbers have to be treated in terms of the effect they have on quality either by way of deterioration or of improvement." (50)

Increasing numbers were considered as a source of strength in the nineteenth century especially in those countries which were constantly engaged in wars. Even in our times we have seen the preference for large numbers under Fascist regimes of Mussolini in Italy and Hitler in Germany during pre-Second

World War period. They might have had their own reasons for seeking an enlargement of population. The under-populated countries like Australia and Canada may perhaps accelerate their economic developments by a rise in their population. These countries too, are quite cautious in admitting immigrants, particularly from Asian countries as they expect that such a step may lead to future racial or ethnic troubles. Thus, there are only a few countries in the world where an increase of population may lead to a better quality of life. But on the whole it may be said that they are exceptions which only prove the rule that majority of countries today, especially the Asian countries, may be described as over-populated. So far as density of population is concerned, Japan belongs to high density area among developed countries with an average density of population of 428 per sq. kilometer, while India is a part of moderate density area among developing countries with an average density of 166 per sq. kilometer, both in 1960. (30)

But, while Japan has fully controlled her birth rate, developing countries like India have yet to achieve it. To be concrete, according to Population Reference Bureau's World Population Data Sheet, 1971 the crude birth and crude death rates of Japan are 18 per thousand population and 7 respectively, while those of India are 42 and 17 respectively, in the same year. This gives an annual rate of growth of 1.1 per cent for Japan and 2.6 per cent for India. At this rate India's population is likely to double itself in 27 years whereas 63 years will be needed for Japan to double its population. (45)

Therefore, it may be concluded that most of the countries of the world are struggling hard to establish a balance between their birth and death rates at a level as low as possible. Affluent countries like the U.S.A. are no exception. The Commission on Population Growth and the American Future appointed by the U.S. President, in its interim report issued in 1971 came to the following conclusions: "Our view, at this stage of our inquiry, is that population growth on the magnitude we have had since World War II has aggravated many of the nation's problems and made their solution more difficult". (45)

If the growth of population in the U.S.A. has created difficult problems for that prosperous and fully developed country what would be the effects of such a calamity on a country like India, which is even today an agricultural country striving towards industrialization.

(i) *Food problem in India*: High hopes were entertained by the people after the country became free in 1947. In spite of implementation of Six Five Year Plans Indian economy continues to be an economy of shortages. The main reason for it is the country's excessive population growth. "Between mid 1947 when India gained her political freedom and 1969 she added nearly 200 million to her population." (45) This is equal to twice the population of Japan or a little less than the population of U.S.S.R. at mid 1971. The problem of feeding, clothing and sheltering this huge ever-increasing mass of humanity is stupendous. Among these the most crucial problem is the provision of adequate food for more people. The situation has not been mitigated in the last decade, rather it has worsened still further.

India has made tremendous progress in agriculture since its independence in 1947. The First Five Year Plan which was launched in 1951 laid down solid basis for the future agricultural revolution in India. Green Revolution has been experienced in some parts of the country. As a result of all this the agricultural production has gone up. Unfortunately, its impact could not be felt by the average citizen of the country. This is due only to the increasing population of the country—at the rate of 2.5 per cent per year. The benefits accrued from the Plans have been spread thinly over larger and larger additions to population every decade ". . . . to a large extent, fruits of these efforts have been swallowed by the growing numbers. As an example, production of foodgrains in the country increased from 510 lakh tonnes in 1950-51 to 720 lakh tonnes in 1965-66 i.e. by 41 per cent, but the amount available per person per day increased from 6.75 chattaks to 7.15 chattaks i.e. . . . by 6 per cent only. Increased food production has now to be shared by a much larger number. Population is a dominant factor." (30)

The following figures also support the above view :

TABLE 2.8

Daily Per Capita Availability of Food in India

Year	*Population in Million*	*Food Production in Million tons*	*Daily Per capita availability of food in grams*
1968	515.4	86.80	460.1
1969	527.0	85.62	445.2
1970	438.9	89.49	455.0
1971	550.8	94.31	460.1
1972	562.5	96.21	467.3
1973	574.2	88.80	423.7
1974	584.1	96.80	452.5
1975	597.9	89.18	408.6
1976	609.3	102.08	457.8
1977	620.2	99.31	438.0
1978	634.2	132.09	—

The achievements of the green revolution have been spectacular in India. Praises have been showered on us by foreign experts and U.N. agencies; but the achievements are still modest compared to our needs. We are still importing millions of tonnes of food from other countries. This acts as a drain on our foreign exchange resources which could have been utilized for industrial development. An agricultural country like India must depend upon its agricultural surpluses to finance its industrial programme. On the other hand food imports have been a perennial feature of our economy. This is evidenced from the following figures.

Since the beginning of the First Five Year Plan we have declared self-sufficiency in food as one of our objectives of economic planning but upto now it has not been permanently realised in practice and during lean years our imports of food-grains have actually gone up. Dr. Sukhatme said in 1968:

TABLE 2.9

Food Imports in India

Year	*Population in Million*	*Production of food in Million tons*	*Food imports in Million tons*
1973-74	586.1	96.80	4.0
1974-75	597.9	89.18	5.0
1975-76	609.3	102.08	6.0
1976-77	620.1	99.31	5.0
1977-78	634.2	131.09	3.0

"Thrice in the past 15 years we have proclaimed self-sufficiency in food-grains as our goal. But not only this goal has remained unfulfilled, but the imports, instead of diminishing, have increased to a point where even physically it has become difficult to handle them." (71)

It was estimated that the total amount of foodgrains required during 1970-71 would be around 120 million tonnes, an increase of 48 million over production of 1965-66 of 72 million tonnes during the Fourth Five Year Plan period. (1) An increase of 48 million tonnes within a period of five years implies a rise in agricultural production of about ten per cent per year over 1965-66. This was a difficult job before the country, as the past had shown a different trend in the production of foodgrains. S.N. Agarwala in this respect remarks : "This is not an easy task as agricultural production increased at an annual rate of four per cent over the period 1949-50 to 1961-62 with the triennium ending 1951-52 as the base . . . . The scope, however, of an increase in acreage under agricultural production in subsequent plans appears limited and, therefore, a growth of even five or six per cent per annum appears difficult. But what is required is a 10 per cent annual rate of growth."

This forebodes a gloomy picture for our country. Even assuming that self-sufficiency in food has been attained for some time, will it be possible for us to maintain it permanently for at least two or three decades, in order to have breathing space for development of our industrial sector? The answer is hesitating. If our population grows at the rate of 2.5 per cent per annum which is the present rate, it is presumed that the provision of foodgrains too has to be increased in the same proportion, assuming even a constant per capita consumption, though this is sub-marginal.

It is a tremendous task and appears to be beyond the range of possibility, at least under the present technological conditions of the country. This is perhaps a major problem which not only India but also other developing countries are facing today.

According to Prof. Jayasuriya "to feed the likely population in 2000 A.D. the developing countries would have to increase their supply of food by 120 per cent while the developed countries would need an increase of 40 per cent only." (32)

Taking the world as a whole in which population grows at the rate of 2 per cent and assuming that the total world production of foodgrains increases in the same proportion, there is no guarantee that all the developing countries will get their share of food requirements from the world agency because no such body exists and there is no likelihood at least in the foreseeable future, that it will come into existence. The barriers of nationalism are too strong to permit an easy mobility of food supplies among the countries of the world. This is not surprising when we see in our own country the hurdles of regionalism impeding a free flow of goods between two States.

In the final analysis, it may be said that each country should rely on its own resources. India should try to be self-reliant. However, it is not merely the quantitative aspect of food that concerns us. The qualitative or nutritional aspect causes us still greater anxiety.

(ii) *Qualitative Aspect of The Food Problem*: In India the gap between the population growth and required food supply is widening and causing serious concern to all. Not only is the daily intake inadequate but its nutritive value is far from satisfactory for an active and healthy life. This leads to chronic deficiency among children and retardation of their growth. The reluctance of mortality rates in India to drop down still further is owing to inadequate diet of Indian people. This also leads to low stamina and low productivity on the part of Indian labour. The Food and Agriculture Organization of the United Nations while studying the problem of food supply of the developing countries came to the conclusion that, "In order to provide sufficient food for the growing population and to meet progressively the needs for protective foods of the vulnerable groups of the population, the total food supply in the developing countries will have to be increased by 75 per cent during the period 1965-80 and by 225 per cent during the period 1965-2000." (2) The task appears to be nearly impossible even with the scientific and technological innovations of the present time.

The nutritional value of food intake is determined in terms of calories consumed per day. The following table shows the consumption of calories and proteins in certain countries of the world:

TABLE 2.10

Consumption of Calories and Proteins in Different Countries

Country	*Calories per day*	*Protein per day (grammes)*
Ceylon	1920	42
India	1940	50
Japan	2280	73
Pakistan	2220	51
Philippines	2000	46
U.K.	3280	90
U.S.A	3120	92

It is seen from the above table that the level of nutrition in India is very low and, therefore, this will certainly have adverse effects on the enjoyment of health, labour productivity and the longevity of the people.

According to the U.N. Expert Committee findings 2200 calories per day is the minimum requirement to maintain adequate health. (45) In India, as per table above the average calories consumption is 1940 only. Thus, India is a typical agrarian nation with quantitative intake of food at sub-marginal levels. Adequate nutrition is the highest need of the hour. The battle for improvement of quality of food must start without any delay in the interests of future generations.

Attempts have been made in India to estimate the needed quantity of foodgrains and animal products to satisfy the caloric requirements of the country, based on minimum and medium level targets, for a period of a decade from 1971-81.

The estimates made by Dr. V.K.R.V. Rao and Dr. P.V. Sukhatme are given below:

TABLE 2.11

Caloric Requirements

	Minimum Targets				*Medium Targets*	
	1971		*1976*		*1981*	
	Sukhatme	*Rao*	*Sukhatme*	*Rao*	*Sukhatme*	*Rao*
Cereals	81.6	78.6	91.9	87.6	94.4.	86.3
Starchy roots	9.3	16.4	10.5	18.2	11.6	23.7
Sugar	10.1	10.1	11.4	11.2	14.1	13.6
Pulses & Nuts	21.1	20.9	23.7	23.4	23.9	23.1
Fruits & Vegetable	27.8	32.8	31.2	36.6	39.8	47.4
Meat	1.4	1.4	1.6	1.6	2.5	2.4
Fish	3.4	3.4	3.9	3.8	8.1	7.8
Eggs	0.4	0.4	0.46	0.44	1.3	1.2
Milk	40.7	40.4	45.85	45.0	69.8	67.3
Fats	3.7	3.6	4.1	4.0	5.0	4.9

The preceding estimates are based on the total requirement of about 2375 calories. Both Dr. Rao and Dr. Sukhatme are in agreement about total caloric requirement "but differ in caloric intake from cereals and starchy roots. They also differ in the estimated rate of growth of population, especially after the year 1971."(1)

The targets set in the preceding table are by no means very ambitious as they fix up the total requirements round about 2375 calories. This is by no means much higher than the minimum set by the U.N. Expert Committee to maintain reasonable health i.e., 2200 calories. But compared to our present food production and heavy demands made on it by increasing population it is quite reasonable and as such we should strive to achieve it, though it cannot compare with the calorie consumption of developed countries which is more than 3000 per day.

The food problem in India is the result of many factors but the one which is at the very roots of it is the uncontrolled growth of our population. Improving the quality and quantity of food resources in the developing countries like India is an uphill struggle. But the struggle has to be carried out successfully for sheer survival. The battle is to be fought on three fronts: (1) increasing the agricultural output to feed and adequately nourish the people; (2) enlarging the non-agricultural sector with labour-intensive industries, so that there is a shift from agriculture to non-agricultural enterprises, thus relieving pressure on land; and (3) bringing the birth rate down, as the root-cause of the whole problem lies here.

(iii) *Population Growth and Economic Development in India*: Since Independence in 1947, India has been making rapid strides towards economic development. Six economic plans have been implemented so far. Indeed, great strides have been made in every sector of human activity, namely agriculture, industry, health, transport and education but the average Indian does not feel the effect of all these advances. This is because of fast growth of our population in the last four decades. The benefits accrued from our planned efforts have been thinly spread over the increased population we are adding every year.

As Dipak Bhatia wrote in 1960, "India has achieved a remarkable record in planned economic development. Food production has increased by about 70 per cent since Independence in 1947. Industrial production has advanced by 150 per cent. Still the average Indian feels little or nothing of the benefit of this development, mainly because the population has been increasing at a rapid rate...."

In spite of our efforts towards industrialization, India is still predominantly an agricultural country with nearly seventy per cent of her population dependent on agriculture. A substantial shift from over-burdened agriculture to industry has not been effected even though it was one of the objectives of our planning and specially the Second Five Year Plan which stated that: development involves a transfer of part of the working force from agriculture to secondary and tertiary activities. (22)

When planning is introduced in an agrarian nation the intention is to relieve much of the population from agricultural activities, where under-employment is suspected, to other fields of higher productivity so that there is employment for most of the people and an increment in national product as well as a rise in per capita income. Gunnar Myrdal rightly claims: "The reason for emphasizing industrialization is that industrial development would absorb rural under-employed persons into those fields of production where higher productivity is possible without reducing total agricultural output." (47)

(iv) *National Income*: The growth of national income in India has not been very spectacular. This is also because the transfer from agriculture to secondary and tertiary industries is not as fast as it was expected. Upto now agriculture constitutes our greatest enterprise. Its contribution in 1969 to the national income was around 47 per cent.

"Over the period 1950-51 to 1968-69 the aggregate national income of India at 1960-61 prices increased by almost 70 per cent i.e., from Rs. 9650 crores to 16,830 crores. But the per capita income has increased by only about 18 per cent from Rs. 270 to Rs. 319. In fact, between 1960-61 and 1968-69 the per capita income has increased by only four per cent from Rs. 307 to 319." (8) At current prices our per capita national income has gone up to Rs. 1379 in 1980-81.

Had the population been growing really at the rate of one per cent per annum, as was assumed in our First Plan, as against two per cent and more which is the actual figure, the per capita income would have been nearly double.

S.P. Jain states that the per capita income in India was Rs. 481.5 in 1967 which is one of the lowest even among developing countries. The countries whose per capita income is below U.S $ 300 i.e. Rs. 2250 are classed as poor countries.

The Indian per capita income is much below the international poverty line. Not only our per capita income is low but its distribution also is highly uneven and does not correspond to the socialistic pattern of society we are envisaging. Thus the late Prime Minister, Pandit Nehru said in despair: "Rich have become richer and poor have become poorer. The idea of distributing the wealth equitably has not been achieved; concentration of wealth in a limited few continues." (55)

The very low national income in India, as we have seen, is not because no efforts were made to increase the size of the national cake but mostly owing to the fact of increasing number of sharers. Thus the question boils down to the fact that in the interest of the future "the frightening power of human reproduction must be curbed" (45) as Dr. Norman Borlaug rightly said.

In a poor country like India the possibilities of improved agriculture and an expanded base for manufacturing and industrial operations is limited by the investment power of the people which in its turn is restricted by the availability of savings in the country. Low national income and its sharing by a numerous population leaves the per capita income at a very low level and does not permit a required quantum of savings.

In a purely agrarian nation most of the savings come from agricultural surpluses. Increasing non-agricultural output of such nations through savings and investment is also a slow process. Unless an economic "take-off" takes place, there is no guarantee that their economic standards will improve and a continuously rising level of per capita income assured.

According to Rostow such a "take-off" has already started in India from 1937 and India may be almost deemed to be airborne.

Whatever may be the theoretical implications of this concept of "take-off", one cannot deny the fact that our high birth rate is certainly an impediment to sustain it as one of the conditions of "take-off" is a rise in the rate of productive investment from under five per cent to over 10 per cent of net national product. (31) This condition is not easy to fulfil for a country like India.

In India, at present, population is increasing at the rate of 2.5 per cent per year. Let us see what are the implications of this growth rate from the point of view of capital investment.

Economists generally agree that the capital output ratio is 3:1 in underdeveloped countries, per year. That is to say, if the national product is to be increased by 5 per cent annually, then a minimum investment of 15 per cent of national income is to be made. The basic assumption in this statement is to consider the population growth as stable during the period in question. However, coming to realities in India where the population growth per year is 2.5 per cent, it is calculated that, in order to secure the five per cent increase in national product the investment should be higher than 21 per cent of the national income. It is difficult or, frankly speaking, a task well-nigh impossible. The experience gained through the working of Five Plans leaves us no doubts on fulfilment of the above targets of investment, because even during the currency of Five Plans we were not in a position to invest more than 10 to 12 per cent of the national income.

Development of industry in India is thus hindered because of shortage of capital which cannot be accumulated owing to low per capita income which prevents savings. In order to improve the efficiency of industries the workers must be trained and enough equipment should be provided for them so that the level of output is satisfactory. This requires huge investments which cannot be materialised because of paucity of savings. "It has been estimated that roughly 540 billion dollars worth of equipment would be needed to raise the average output per worker in major parts of Asia to the level reached by Japan before the Second World War." (1)

The theory of 'demographic investment' which offsets the effects of growing population and gives every worker the same amount of equipment as in preceding generation, cannot lead us anywhere. If India is to make a lead, investments beyond 'demographic investment' i.e., economic investments, are badly needed. It is a difficult job, no doubt, but it will have to be performed if we want to industrialize our country.

(v) *Age Structure*: Rapid growth of population in the last fifty years has also affected the structure of India's population. A growing population is generally a 'young population.' According to T.S. Mehta, nearly half of our present population is below 16 years of age. The median of advanced countries is 30 to 35 years. (45)

The percentages of total population below the age of 15 for some selected countries are:

TABLE 2.12

Percentage of Population Below 15 Years in Selected Countries

Northern America	24 per cent
U.S.S.R.	28 per cent
Japan	25 per cent
Israel	33 per cent
India	41 per cent
Pakistan	45 per cent

The high percentage of 41 in India has unfavourable effects on the economy as a whole. It may also be noted that developed countries have fifty per cent less of this burden. There is every probability that the population of those under 15 years of age is greater than that of China. This means that we have the potential of becoming the world's most populous country.

According to David M. Heer, when fertility is high, the number of persons in each age group declines rapidly from youngest to the oldest age groups and the population of younger age group is very large, but when fertility is low the number of persons in each age-group declines very gradually from the youngest to the oldest age-group, so that the population from old age-groups dominates the scene. (33)

In India we are typically in the first situation and that is why our population is called 'young population.' This can be well judged from the following table.

TABLE 2.13

Percentage Age Composition in 1960 and 1980

Group	*Japan*		*India*		*Europe*	
	1960	1980	1960	1980	1960	1980
0—4	8.4	8.0	16.2	12.9	8.9	7.9
5—14	21.5	14.4	24.5	25.2	16.8	15.1
15—24	19.2	13.8	18.5	20.2	14.5	15.2
25—44	28.6	33.2	25.7	24.9	26.8	27.0
45—64	16.6	22.0	12.1	13.2	23.2	21.7
65—to over	5.7	8.6	3.9	3.7	9.8	13.1
	100.0	100.0	100.0	100.0	100.0	100.00

The conclusions of the above table are:

1. The percentage of children below 15 years of age in 1960 is 29.9 in Japan, 40.7 in India and 25.7 in Europe. This is likely to change in 1980 to 22.4 in Japan, 38.1 in India and 23.0 in Europe.
2. The percentage of persons over 64 is 5.7 in Japan, 3.9 in India and 9.8 in Europe and this may increase to 8.6, 3.7 and 13.1 per cent in 1980 in these countries, respectively.
3. In 1960 the percentage of working population between 15-64 was 64.40 per cent in Japan, 56.30 per cent in India and 64.50 in Europe.
4. The same percentages will [change in 1980 to 69 in Japan, 58.30 in India and 63.90 in Europe.

The spectacular increase of percentage of working population of Japan in 1980 is because of effects of sharp decline in fertility which went down by 47 per cent between 1947 and 1954, "a rate of decline several times any ever before experienced in Japan or Western Europe." (47)

At this stage it will be proper to introduce the concept of so-called 'dependency ratio' in order to understand the difference of implications between a young and an old population.

We have seen the percentages of population below 15 years in India, Japan and Europe and noted also that the percentage is very high i.e., 40.7 below 15 years in the case of India and that above 64 years in 3.9 in this country. The age-group 15-64 is generally regarded as economically productive, while the age groups under 15 years and over 64 years are together taken as constituting the dependent age-groups. The ratio of persons in dependent age-groups to persons in economically productive age group is called the 'dependency ratio.'

The dependency ratio is evidence of an immediate burden on development. A high dependency ratio is the result of high fertility. When the fertility rate is constant, the effect of a decreasing mortality rate is to increase the dependency ratio. In India the dependency burden is high because fertility in India has not come down considerably. This combined with the spread of health facilities has decreased infant mortality and increased the life span of adults.

The developing countries have high dependency burden i.e., a smaller proportion of population has to shoulder the responsibility of supporting a larger section. This is evident if we take the case of India where in 1960, 55 per cent of population had to support the rest; whereas for Europe for the same year it was 65 per cent. A young population is not only a burden for maintenance but forebodes an explosive reproductive capacity of the people in the very near future. Prof. Jayasuriya says, "when child mortality rates progressively decline, as is generally the case, and this decline is accompanied by high fertility, not only does the resulting situation impose on a relatively small economically productive sector the crippling burden of supporting a large economically dependent sector, but it also portends for the future a growth in the size of the reproductive age group with consequent implications for an increase in the number of children in the immediate future."(33)

The broad-based Indian population pyramid with its tapering top is cause for grave concern for all because the high dependency ratio imposes a crushing burden on our economy and slows down the pace of economic development of the country.

The following table will clarify the above statement:

TABLE 2.14

Dependency Burden

	Dependent Ages		*Productive Ages*	
	1960-63	*1975-78*	*1960-63*	*1975-78*
India	190,300,000	284,000,000	233,300,000	316,600,000

From the above figures it can be seen that in a period of 15 years the persons born in 1960-63 will be entering the labour market in 1975-78. During this period the number of persons of dependent ages will increase by 93,700,00 whereas the increase on the side of productive ages will be only 83,300,000.

The unfavourable situation in respect of dependency burden has its repercussions on our social and economic life. The high proportion, as we have seen, of younger persons apart from being a burden on our working force causes heavy strain on our economy as more and more of our scarce resources are to be diverted to unproductive activities. Younger generations require more food, clothing, housing, schools, hospitals, dispensaries, transport, etc. The basic requirements must be provided at any cost and as such a major part of our resources is destined for consumption activity which has adverse effects on our capacity to save and capital formation and consequently investment is badly affected. Lack of investment slows down production and further affects saving capacity of the people thus forming a vicious circle.

It is sometimes argued that increased population increases demand and leads to the expansion of markets and consequently more production. This may be true in case of countries like

Canada, Australia which are classed as under-populated but does not apply to countries like India.

About 13 million people are added to our population every year, necessitating an annual provision of 126,500 schools, 372,500 school teachers, 2,509,100 houses and 4,000,000 jobs. (34) The expert group of the National Committee on Science and Technology has opined that in 2000 A.D. half of the population of India will have no houses to live in and the food situation will be precarious. (77)

Dr. Agarwala estimates the number of primary teachers required in 1971-86 as follows:

TABLE 2.15

Number of Teachers Required for Primary Classes

(1971-1986) (in lakhs)

Year	*Total Teachers Required*	*Additional Teachers Required*
1971	22.25	5.99
1976	30.25	13.99
1981	35.38	19.12
1986	39.25	22.99

The studies on population conducted by the United Nations estimated that the number of children of school-age 5-14 years would go up at least, by 50 per cent by 1975-76. This will require additional expenditure in the form of teachers, school buildings, etc. India, under the present conditions, has to invest more and more in agriculture and industries, so that the productive capacity of both the sectors is increased simultaneously to effect a shift of population from agriculture to industry in order to relieve agricultural pressure and lead the way towards rapid industrialization, so that incomes are raised and standard of living improved. Unfortunately, young population foils all our plans and the high fertility tends to maintain or even worsen our age composition of population which acts as a brake against national progress. The only solution before us is to curb the 'baby boom' so that the dependency burden is reduced; if not, the disaster will come soon. The unfavourable age structure in India is entirely due to our high birth rate.

(vi) *Labour and Employment*: The growth of population implies also an addition to the labour force of the country. A larger labour force requires a large stock of productive facilities namely equipment, training, etc. to have the same productivity per head. This is known as 'demographic investment.' But further investments are required if the country intends to increase the productivity per worker and to have a higher standard of living. More and more investment will be needed in proportion to the rate of growth of population of a country and the targets of production it wishes to set in the short as well as in the long run. According to Dr. Agarwala, "it has been estimated that an under-developed country whose population is increasing at one per cent per annum, must invest from 3 to 5 per cent of its national income, in order to keep a constant average amount of equipment per worker. If, however, the population is increasing at 2½ per cent per year 7½ to 12½ per cent of the national income will be required to be invested." (1)

Most developing countries find it difficult to invest as much as from 12 to 15 per cent and this places a burden on the next generation to utilize more than half of their investment merely to provide capital for the growing labour force.

A reduction in fertility does not affect the size of the labour force immediately as those who are born will join the labour force only after about 2 decades, but reduced fertility affects the well-being of existing labour as it decreases the dependency burden, releases more resources for productive purposes and thus affects favourably the per capita income. In the words of Prof. Jayasuriya: "In the long run, the slower rate of growth that fertility reduction causes would reduce the overwhelming multiplication of density that continued rapid growth implies." (33)

India is mainly an agricultural country where nearly 72 per cent of people draw their livelihood from agriculture as cultivators and labourers. This does not mean that agriculture gives them full employment. There is heavy pressure on our agriculture and this depresses the productivity per worker and leads to low incomes. The picture will be still worse in the very near future when more labour will still be added to our existing labour force which will lead to still further fragmentation of agricultural holding and consequently less productivity.

It is estimated that in India almost 45 per cent of total land area is already under cultivation and the scope for reclaiming other land for agriculture is extremely limited and therefore with increased population the availability of land per worker will continue to decline. (8)

The alternative, therefore, is to develop non-agricultural sector and draw the agricultural labour from agriculture to secondary and tertiary sectors. As Gunnar Myrdal opines: "Eventually a situation must be reached where more labour cannot be absorbed by agriculture or can be absorbed only at very low productivity rewards. If industrialization has not by then reached the level where it can more massively give work to a growing part of the increase in the labour force, this implies greater misery for the masses in agriculture and stagnation or even retardation of economic development generally." (47)

So, we see that the employment pattern of India is conducive to low incomes and the chances of improvement in the near future are poor as we are a young population, adding continuously to the labour force. This can be seen from the following table:

TABLE 2.16

Addition to Labour Force (1961-81)

In million

Year	*Size of the Labour Force*	*Addition*
1961	162.2	—
1966	181.6	19.4
1971	203.4	21.8
1976	231.0	27.6
1981	263.2	32.2
Total	1961-81	101.0

In a period of 20 years from 1961-81 there will be an addition of 101 million workers i.e an average addition of 5 million per year. Thus, jobs are to be made available to the new entrants into the labour-market every year. This is a colossal task before the country as there is at present a serious wave of unemployment because of lack of expansion of industrial sector which is being starved of capital because of low saving potential.

The unemployment situation had been visualized by our planners when they formulated the First Plan for the economic development of the country. One of the objectives of our First Plan was full employment. As stated in the Draft Outline, "A development plan is essentially an effort to create conditions for full employment." (21)

How feebly we have succeeded in this objective can be judged from the following figures:

TABLE 2.17

Unemployment and the Plans

(Figures in Million)

Plan	*Backlog of Unemployment at the beginning of each Plan*	*Net addition to labour force during the Plan period*	*Additional jobs to be created during the plan period*	*Backlog of Unemployment at the end of each plan base on plan target*
First (1951-56)	No Estimates	No Estimates	No Estimates	—
Second (1956-61)	5.3	11.7	10.0	7.2
Third (1961-66)	9.0	17.0	14.0	12.0
Fourth (1966-71)	10.0	23.0	19.0	14.0

The backlog of unemployment has increased at the end of each Plan. Between 1971-78 the country's labour force increased by 35 million of which only 9 million were gainfully employed.

Since planning was introduced in this country efforts have been made to increase the employment potential; and this has been done to some extent. However, for the last two decades the growth of population has been so terrific that much of our efforts have been wasted.

Secondly, our first two plans were based on the assumption that the rate of our population growth was one per cent per year. This presumption has been falsified by subsequent events and we realized only during the sixties that the rate of growth was largely under-estimated.

Under-estimation of population trends led us to a situation of non-achievement of targets fixed in the plans. Just as with other estimates the unemployment situation could not be remedied and huge backlog of unemployment began to develop at the end of each plan. This can be gathered well from the preceding table.

It was estimated that at the beginning of the First Plan, 3.5 million people were unemployed. During the three plans, 31 million additional jobs were created but at the end of the Third Plan nearly 10 million people were unemployed. (27) The Fourth Plan was further expected to leave a greater backlog of 14 million unemployed persons. Though increased number of jobs were created during the plan periods still the unemployment figures have risen terribly. Add to this the underemployment of the people engaged mostly in agricultural activities and we can guess the terrific spectrum of waste of human energy.

We have indeed made great strides in every field of human activity by planning our economic life but huge and uncontrolled growth of population has almost nullified our ambitions to have a progressive economy capable of giving a reasonable standard of living to our teeming millions: "People have not yet realized that population and standard of living are interrelated questions, specially in a developing country like India where mobilization of resources is rather difficult." (55)

To sum up, high birth rates, allied with declining death rates have increased the demographic gap and have led to population explosion in India.

Apart from ecological considerations the demographic explosion has led us to think seriously. Population explosion has taken place in the developed countries of the world too, but certainly under a different background of events.

The developed countries had a high standard of literacy. Industrialization, urbanization and modernization soon took deep roots in them. The living standards of people went up and they were eager not only to maintain the existing standards of living but aspired for still higher ones. The entry of women into the productive sector also made the people realize that children were more of a burden than an asset specially in an urban setting.

The dramatic fall of birth rate in Japan between 1947—1954 by 40 per cent was conditioned by the precarious conditions of the country after the Second World War. At the end of the War, Japan had lost her empire and her industry was in a dismal state because of lack of outlets for manufactured goods. Repatriation of prisoners of war and civilians from lost colonies put a heavy strain on her economy and Japan decided to bring down the birth rate by resorting to drastic yet very effective method of induced abortion by passing "Eugenic Protection Law" in May 1948. The spectacular results of this measure can be seen from the following table:

TABLE 2.18

(per thousand population)

Year	*Birth Rate*	*Death Rate*	*Rate of growth*
1947	34.3	14.6	19.7
1949	33.0	11.6	21.4
1951	25.3	9.9	15.4
1953	21·5	8.9	12.6
1954	20.0	8.2	11.8

In a period of hardly seven years Japan could decrease her birth rate by 40 per cent, while the death rate too showed a similar decline. Thus the growth rate which was nearly 2 per cent was brought down to 1.1 per cent in 1954. In 1971, Japan's birth and death rates were 18 and 7 per thousand population, respectively. (45)

In recent years, a decline in fertility has taken place in some Asian countries, namely Hong Kong, Singapore and Taiwan. Ceylon, too has reduced its crude birth rate from 36.6 per 1000 in 1960 to 31.6 in 1967. The fall in crude birth rate for the three countries mentioned above is:

TABLE 2.19

	1961	*1967*
Hong Kong	35.5	24.6
Singapore	36.5	25.9
Taiwan	37.7	29.3

As a result of reduction of birth rates, the rates of increase in Hong Kong and Singapore 1.6 per cent in 1969, in Hong Kong 1.7 per cent in Singapore 1968.

The decline in birth rates in these countries has been attributed to the high percentage of literacy, which favours the adoption of small family norm.

Thompson and Lewis distinguish between two kinds of population pressures: absolute and relative. Absolute pressure is described by them as the actual need of physical goods necessary for survival and a few amenities of life. The relative pressure is defined as the degree of deprivation one feels as he comes to know the meagreness of his manner of living compared to that enjoyed by others. (61)

India, like most of the developing Asian countries is a victim of both the types of pressures. However, one need not despair over the matter. With high hopes, determination and courage the population dilemma has to be solved with typical Indian method. The only way of relieving population pressure in

India as well as in other developing countries, "is for man to adjust his birth rate to his ability to make a decent living with the resources at his disposal." (61) This change of attitude is to be achieved in India.

Conclusion

That birth rate must come down in India is a must. On the successful accomplishment of it depends the very survival of our nation. Efforts have been made in India towards achieving a steep decline of birth rate but the results have not been very encouraging.

Three patterns of decline in birth rate have been placed before us: (1) the Western pattern of developed countries where a change was brought about because of improvements in the standard of living; (2) the Japanese pattern of induced abortions; and (3) a distinct Asian pattern in which fertility decline has been a consequence of high percentage of literacy.

India cannot afford to wait to generate a decline in birth rate till she is industrialized—because industrialization itself has been hindered by growing population, nor till the time when people attain universal general education. The Japanese method of induced abortions will not be a practicable proposition in India: Firstly because Japan was already a developed country with a very efficient medical service so that abortions could be undertaken with the least risk to mother's life. Secondly, abortive practices are not liked by most of the Indians on the grounds of religion or social beliefs. Gunnar Myrdal referring to the Japanese experience says, "Abortion and even infanticide had a long history there, whereas in South Asia religious sentiments sharply censure such practices." (47)

India cannot faithfully copy any of these patterns which have led to decreasing birth rates in the West and other Asian countries. However, she cannot, at the same time, afford to be idle in intellectual exercises, because by that time, our population will be too large and unmanageable. Each year, every day and even second is important because, "a baby is born every 1½ seconds, 57,000 babies are born every day and 21 million are born in a year." (73)

To sum up, India will have to evolve, immediately, her own pattern of fertility reduction which may be a combination of Western and Asian patterns we have referred to so that the present high birth rate of 39 per 1000 population may come down to 25 per 1000 by the last decade of the century at the latest.

3

Measures of Population Control in India

Growth of population is not the only factor leading to degradation of standard of living of our people. Better standards would have prevailed if India were endowed with bountiful natural resources, if the rate of economic growth were on a higher level and if education were widespread. In the absence of a balanced growth of these factors, population increase alone dominates the scene and its effects on the socio-economic life of the country are quite adverse.

The Indian Government is conscious of this phenomenon and is trying its best to tackle the economic situation of the country but for the population factor and its threatening march onwards.

The measures taken by the Government to meet the challenge of population growth consists of a two-pronged approach: (1) Clinical Approach; and (2) Educational approach. The target groups of these two approaches are different.

It may be observed from the available statistics that 42 per cent of our population is in the age group 0—14 years, and 21 per cent in the age groups beyond 45 years. (59) Considering that the fertility of women is limited between the ages 15 to 45 years, our clinical approach in the form of Family Planning programme covers hardly 37 per cent of population.

Therefore, the educational approach which will cover 42 per cent of population in the age group 0—14 acquire an important dimension, because it is this group which will decide about the population trends in the next one or two decades. Hence necessary population awareness is to be created in them. This new trend in education is named as Population Education, which will be dealt with subsequently. This does not render infructuous the Government thinking in enhancing family planning in the country as both of these approaches are complementary to each other. It will be pertinent, therefore, to examine at this stage the details of our Family Planning programme.

Family Planning Programme

The impact of population rise in the second half of the present century has been rather unfavourable on the socio-economic life of India. What is happening at the macro level in the country has not been seriously realized at the micro level of the family as yet. This sense of unawareness on the part of Indian people at large has led us to the present quagmire of poverty, unemployment and degrading standards of living.

Thus, we are, at present on the threshold of a new crisis which has been caused ironically enough because of rapid increase in 'death control' not accompanied by a decline in birth rate.

For the solution of this problem two alternatives are available: "an increase in deaths or a decrease in births (other theoretical alternatives, such as migration to other planets, are not at present or in the immediate future realistic possibilities). Increasing the death rate is morally untenable. Decreasing the birth rate is possible." (62)

The reduction of fertility is the only solution to the population problem we are confronting today and which is at the very roots of all our evils; how this has been accomplished by the developed countries of the world and some of the developing Asian countries requires deep study on our part.

The developed countries of the West brought down their birth rates on the strength of their economic well-being and spread of general education. Though it took more than fifty years for the birth rate to stabilize at the low level and bring in the balance between it and the death rate, this did not have adverse strains on their economies which were developing fast. Family limitation which brought the birth rate down was purely a private and personal affair. In this, education acted as a catalysing agent. Specially, emancipation of women and their role as an earning member of the family precipitated the drop in birth rates. As Gunnar Myrdal states: "The decline in fertility, as in the Western countries, has been entirely due to private initiative, running counter to public policy, which has remained pro-natalist. The fact that women in Western Europe, constitute so large and effective a part of the labour force and that their earnings are so important to the family budget has probably speeded the down turn." (47)

According to G. Myrdal it is surprising to note that in Catholic countries like Italy despite the Catholic Church's strong disapproval of birth control and in spite of Mussolini's pronatalist policies the birth rate in that country began to decline. This led him to conclude that, "The somewhat higher fertility rates in Catholic countries and among Catholics in Protestant countries are probably due only to a time lag, in part the consequences of powerty and ignorance." (47) Thus there was a downturn in birth rates in such countries as the economic condition improved and literacy spread to a larger sector of population.

In India, it has been explicitly made clear in our earlier discussion that in view of the emergent crisis of population, a faithful copy of the measures taken by developed countries in the West cannot be a useful proposition. On the other hand, we cannot waste time on useless thinking alone. Whatever steps, within our limited resources, are to be taken must be done without any further delay. Our long history of subjugation to the British has inculcated in us the habit of depending upon the Government for anything and everything. Even after more than three decades of our Independence this habit, acquired through historical accident, has been a part and parcel of our lives and it has been perpetuated ever since. This is, to a great extent, due to our educational system which, in spite of strong recommendations of three Education Commissions appointed by the Government of India in 1949, 1953 and 1964 for radical changes, has remained more or less the same as in

British era. Therefore, private efforts which were rather predominant in bringing down the fertility in Western countries are conspicuous by their absence in India.

Low standard of living of the masses, with the consequent poverty and illiteracy allied with the less rapid industrialization and urbanization, has acted as an obstacle in creating in them a sense of population awareness and an understanding of the demographic consequences of an uncontrolled population growth. On this point, S.L. Ogale opines: "When even the educated people have not fully realised the gravity of the problem, it is not at all surprising that illiterate and ignorant sections of the population do not feel concerned about it." (55)

In spite of these serious limitations, we in our country have made some headway in enunciating a clear-cut population policy in 1950 by laying stress on family planning as a way of life. Then India was the only country where the Government had developed a population policy that promoted family planning. "Today over 60 per cent of the 2.5 million people in developing nations live in countries which have developed population policies favouring the adoption of family planning." (2)

The following table will elucidate the position in respect of countries having government support for Family Planning.

The figures in the Table reveal the extent of support for family planning given by the governments of developing countries. On the whole it is seen that out of a total population of about two and half billions in 1969 nearly 79 per cent of the population of the developing countries came directly under the purview of government-sponsored family planning programme. However, the percentages in Africa and Latin America are smaller compared to those of Asian regions.

This also reveals the lead taken by the governments of the developing countries towards solution of their population problem by a direct attack on the fertility rate of the people.

Review of Family Planning in India

In 1916 Shri Pyare Kishen Wattal published his book entitled *The Population Problem in India* advocating limitation of family size. Prof. Raghunath Dhondo Karve opened the

TABLE 3

Support for Family Planning in Developing Areas

(Population figures given in Millions)

	Government support (Population)	*Per-centage*	*Little or No Government Support (Population)*	*Per-centage*	*Total (Population)*
All Developing countries	1964	79	514	21	2,478
Africa	146	42	198	58	344
Latin America (excluding Argentina and Uruguay)	76	30	173	70	249
East Asia	789	98	15	2	804
Other Asia	953	88	128	12	1,081

first birth control clinic in Bombay in 1925. On June 11, 1930 the Mysore Government issued orders for opening the first Government Birth Control Clinic in the world. In that year two family planning clinics were opened by the Mysore Government, one at Bangalore and the other at Mysore. The Senate of the Madras University agreed to give instructions on contraceptives in 1932 and the Government of Madras also decided to open birth control clinics in the Presidency in 1933. In 1932, the All India Women's Conference at Lucknow session passed a resolution recommending that men and women should be instructed in methods of birth control in recognized clinics. In 1935, the National Planning Committee set up by the Indian National Congress under the chairmanship of Pandit Jawaharlal Nehru strongly supported family planning. During 1935-36 Mrs. Margaret Sanger, a pioneer of family planning, visited India at the invitation of the All India Women's Conference. In 1935 the Society for the Study and Promotion of Family Hygiene was formed with Smt. Cowasji Jehangir as its first President. In 1936 Dr. A.P. Pillai started his training courses in family planning. In 1939 the 'Birth Control World-Wide' in Uttar Pradesh and Matru Sewa Sangh, Ujjain, in Madhya

Pradesh opened birth control clinics. In 1940 Shri P.N. Sapru successfully moved a resolution in the Council of States for establishment of birth control clinics. About this time Smt. Rena Dutta toured extensively to organize birth control campaigns on behalf of the Family Planning Association, London. By 1940 the Society for Study and Promotion of Family Hygiene had become the Family Planning Society incorporating the 'Bhagini Samaj Birth Control Clinic' in Bombay. In 1943 the Government of India appointed the Health Survey and Development Committee under the Chairmanship of Sir Joseph Bhore which recommended provision of birth control service but mainly for health reasons. (55)

Immediately after India attained Independence, in 1947, Indian planners realised that rapid growth of population and the absolute population size would thwart the economic development of the country. India was, therefore, one of the first countries which launched upon a plan of economic development, side by side with population control by bringing about a change in family size and fertility reduction.

Indian experiment in family planning as an official policy, being perhaps the first in the world on such a large scale, could not draw upon the experience of others but had to rely upon her own findings. "Nowhere in the world was there any relevant experience from which India could draw of an institutionalized, deliberate effort of a Government to bring down the birth rate of its people, particularly in a predominantly agricultural and traditional society whose people live in over 5,60,000 villages with widespread illiteracy and where social pressure for a small family is absent." Among the developing countries of the world the Indian experience was the first of its kind and spread over a large target of population than in other countries.

Therefore, when the First Five Year Plan was embarked upon in 1951 our planners were not slow to realize the seriousness of the population rise which was taking place in the country, though later events have proved that they had underestimated the problem. The growing feeling that the population growth was at the very roots of our poverty was foremost in the mind of our late Prime Minister, Pandit Nehru.

(G) Myrdal while recognizing this fact pays him a tribute in the following words:

> Nehru was at some time or other hospitable to most of these ideas. It is true that he spoke out clearly against Gandhi's insistence on continence as the only acceptable means of birth control, and that he never retreated on this score. He occasionally reacted against the number illusion and even said that his nation would be far more advanced if the population were about half as large. It is also certain that he was the driving force behind the policy development on the population issue that has taken place in India. Moreover, he appreciated the enormous difficulties of spreading birth control among the masses as long as their levels of living were so low; but he felt that nothing really effective could be done until these levels were raised very substantially. (47)

The recognition of the menace of rise in numbers was explicit in India's First Five Year Plan which stated:

"The pressure of population in India is already so high that a reduction in the rate of growth must be regarded as a major desideratum. To some extent, improvement in living standards and more widespread education, especially among women, will themselves tend to lower the rate. But positive measures are also necessary for inculcation of the need and techniques of family planning." (21)

After the country's freedom in 1947 much time and thought have been devoted to this important aspect of population trend both by the Government and voluntary agencies. Of these mention must be made of the Family Planning Association of India which was formed in 1949 with its headquarters at Bombay. The Association in subsequent years has done valuable work in the field of population control and successfully focused the attention of the Government on this important matter.

The Planning Commission was appointed in March 1950 and the Panel of Health Programmes of the Commission appointed a Committee in April 1951 to report on population growth and family planning. The report of the Committee was discussed in April 1952 and the formation of two committees: (i) Population Policy Committee and (ii) Population Research and Programmes Committee was recommended. In the meantime Dr. Abraham Stone was invited to India to advise on the establishment of pilot studies on the use of 'rhythm' method of family planning. A number of studies and pilot projects were carried out during the First Plan period to provide guidelines for the future policy and the development of a national programme.

A budget allocation of Rs. 65 lakh was provided for the family planning programme but only Rs. 1.45 lakh could be spent. In the First Fiver-Year Plan emphasis was laid on the rhythm method which proved to be rather unreliable. The approach in the First Plan was research-oriented and it was of exploratory nature and hence no tangible results could be obtained. The progress of the Plan was reviewed by the Planning Commission. It observed that "the programme had progressed enough to call for its further development on systematic lines for continuous study of population problem and for a suitable Central Board for family planning and population problems." (55)

Thus the Central Family Planning Board came into existence in 1956 and the post of Director of Family Planning was also created to serve in the Ministry of Health. "Family Planning Boards were established in each of the several States, and Family Planning Officers were appointed for the States." (34) So, at the beginning of the country's Second Five-Year Plan administrative machinery, at the Centre and the States, was firmly set up to carry out the programme of family planning in India. The population issue was dealt with at a greater length by the Plan which declared: (22)

> The logic of facts is unmistakable and there is the doubt that under the conditions prevailing in countries like India, a high rate of population growth is bound to affect adversely the rate of economic advance and living standards per capita. Given the overall shortage of land and of capital equipment relatively to population as in India the conclusion is inescapable that an effective curb on population

growth is an important condition for rapid improvement in incomes and in levels of living.

It is to be noted that the family planning programme in India had a clinical approach during the second plan. More and more clinics were opened so that people could take advantage of the same. The emphasis now shifted to foam tablets and vasectomy. A budget allocation of Rs. 49.7 million was made for the Plan period but the actual expenditure incurred was Rs. 21.56 million. Thompson & Lewis commenting on this say: "In the first Five-Year Plan, a small amount of money (about Rs. 1.3 million) was earmarked for the encouragement of family planning. This was obviously only a token amount to begin work among about 360 million people, only a few of whom had ever heard of the voluntary control of conception. In the Second Five Year Plan, this allotment was raised to eight million. This again was a mere pittance, for even if all the projects that could possibly be supported by these funds were fully operative by 1961 (the end of the Second Five Year Plan), they would at most have reached only about 40,000 villages out of a total of perhaps 5,50,000, less than one-tenth of the agricultural population." (61) Ironically, even this small provision could not be fully utilized.

Only by the end of the Second Plan period and after the publication of the Census report of 1961, was it realized that the basic assumption on which our whole planning was erected, that is to say the rate of population growth, was largely underestimated. The mistake was, however, corrected by the time the Third Plan was being prepared. "It is worth noting that the estimates of population growth given in the final plan worked out to be 2.4 per cent per year over the next fifteen years. As the Fourth Plan was prepared, the expected rate of population increase during the next five years was raised to 2.5 per cent...." (47)

The clinical approach in the Second Plan did not produce fruitful results in the field of family planning programme though the number of birth control clinics increased from 147 during the First Plan to 1650 during the Second Plan. The introduction of Anglo-Saxon pattern in India by which specialized clinics were set up to advise women, individually, about adequate birth control methods did not work well on the Indian soil for a variety of reasons, mainly due to the shyness of Indian women to contact the specialized clinics where advice on contraception could be obtained. This difficulty was removed in the early 1960's when the isolation of the family planning programme from general public health work ended and the Anglo-Saxon type clinics where individual advice to women folk was given were discontinued. As a result "the number of clinics giving birth control advice during the first years of the Third Plan thus increased faster than had been planned: in January 1963 there were 8,443 such clinics, of which 6,774 were in rural areas, as against the target of a total of 4,900 at the end of the Third Plan in 1965. Only 3,000 or slightly more than a third of all the clinics were specialized birth control clinics." (48)

The Extension Approach which had been the key-note of the family planning programme during the Third Fiver-Year Plan did produce some impressionable results. This was because of the introduction of Intra Uterine Contraceptive Device (IUCD) for the first time in India on a major scale. The tremendous popularity gained by IUCD in the first two or three years of its introduction made one feel that the 'loop' was perhaps a panacea for our population problem. Unfortunately, this proved to be only a temporary phase, as IUCD lost its popularity because of many reasons, the main being its after-effects on the health and well-being of women who used them. But, it was judged that the change in the approach of the family planning programme from clinical to extension was suitable to Indian conditions. The Anglo-Saxon pattern of specialized clinics took into consideration only the women but it has been realized that women as well as men should be motivated towards family planning programme, more so in countries like India where important decisions within the family are taken by men alone.

For the extension drive the crucial problem was the availability of suitable personnel for doing the work needed. "The target as of 1963 was to employ one male field worker in family planning education for each 20,000 persons which would mean recruiting and training about 25,000 persons for this task." (48)

It is not difficult to train and appoint such a large number of workers as extension educators but whether they will be equal to the task they have to perform is a doubtful question. The family planning programme has, at present, an educational and motivational aspect and it is to be fulfilled with a certain sense of devotion to duty, tactfulness and an understanding of national situation. The main task of these educators is to educate the masses on family planning and to bring voluntary acceptance from a large mass of illiterate and ignorant people mostly spread in our villages. Dr. Misra aptly remarks: "In endorsing the extension approach, Indian policy makers overestimated the effectiveness of the extension educators and underestimated the resistance of the client population." (73)

In the Fourth Five Year Plan the stress on family planning programme was still more intensified and given top priority. The Plan states; "...In order to make economic development yield tangible benefits for the ordinary people, it is necessary that the birth rate be brought down substantially as early as possible." (73)

In the Fourth Plan the programme had become target-oriented and time-bound. Though Government-sponsored family planning programme started from 1951, the objective of the programme to reduce the birth rate to 25 per 1000 population was mentioned only in 1962-63. The target of birth reduction was modified a number of times. In 1966-67 the Government declared the objective of reduction of birth rate from 41 to 25 per 1000 population 'as expeditiously as possible'. In 1968-69 the target to be achieved by 1978-79 was brought down to 22. At present the target has been again revised to 25 per 1000 population by 1980-81. (2)

There is no doubt that allocation of funds has shown a steep rise from one Plan to another for family planning programme. An outlay of Rs. 516 crores was provided in the Fifth Five Year Plan for this programme as against Rs. 330 crores in the Fourth Five-Year Plan. So the targets set for the Plan period were also ambitious; it was thought that during the Fifth Plan period, 18 million sterilizations and 5.9 million I.U.C.D. insertions would take place and 8.8 million people would use conventional contraceptives. Similarly, the Sixth Five Year Plan envisages a target of 22 million sterilizations and 7.9 million I.U.C.D. insertions. (45a)

It is a fact that these targets could not be achieved though in the recent Plans emphasis has been laid on community involvement by offering a package of incentives and awards.

The family planning programme in India has followed a 'Cafeteria' approach in the sense that almost all the necessary clinical and conventional contraceptives are found in the family planning centres. The customer's choice in this respect is important. In India the three main components of the services provided under this approach are sterilization, IUCD and condom. The oral pill also has been introduced.

The success achieved in the implementation of family planning programme cannot be classified as a grand one; on the other hand it has not been a complete failure either. The family planning programme in India is wrought with serious bottlenecks. In the meantime, it is worthwhile noting the comparative picture of our achievements through different methods which are at present available.

The following table shows clearly the performance of family planning programme as well as targets fixed for the period 1966-1971.

Table (B) throws light on the comparative popularity of the three methods of family planning programme currently used in India. The progress of sterilization from its maximum of 1.8 million in 1967-68 has gradually dropped to 1.1 million in 1970-71 totalling 8.34 million for the period upto 1971. According to Dr. B.D. Misra there were 2.1 million sterilizations during the year 1971-72 because of numerous vasectomy camps conducted in different parts of the country, namely, Gujarat, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, Haryana, Uttar Pradesh and West Bengal but he doubts whether this trend would be maintained for a long time through this process. (73)

It is also clear from the table that the IUCD had its greatest hour in 1966-67 when 0.91 million insertions took place. Since then the trend has been downward. "The 1971-72 figures of IUCD insertions represent only a 55.7 per cent achievement of the targets." (73)

TABLE 3.1

Performance of Family Planning Programme

A Targets 1966-67 to 1971-72 (in million)				B Performance 1966-1971 (in million)			
Year	*Steriliza-tion*	*IUCD*	*Conventionals*	*Year*	*Steriliza-tion*	*IUCD*	*Conventional contraceptive (Number of Users)*
1966-67	1.23	1.5	0.8 Urban upto 1.6 Rural	1966	1.5	0.8	—
1967-68	2.6	4.1	1.0	1966-67	0.87	0.9	—
1968-69	3.16	2.1	3.16	1967-68	1.8	0.67	—
1969-70	2.43	0.81	3.24	1968-69	1.66	0.48	0.73
1970-71	2.6	0.9	4.8	1969-70	1.37	0.44	1.43
1971-72	2.1	0.8	3.3	1970-71	1.14	0.41	2.04

It is also evident from the table that the number of users of conventional contraceptives is increasing. However, there is no guarantee that they are effectively used by the people who acquire them. This is mostly noted with condoms. In this connection Dr. Misra remarks that increased distribution of condoms does not mean their increased use. He further states of having observed 'a pile of condoms dumped in a pool of water and later on seeing children coming and playing with them.' He further contends that the free distribution of condoms should be substituted by sale at subsidized prices to encourage use and avoid waste. (73)

Also we can observe from the table that there is a wide gap between the targets fixed and performance under the family planning programme. The difficulties in bridging the gap are numerous.

Obstacles in Family Planning

India is a predominantly agricultural country and tradition-bound whose people live in over 5,60,000 villages with low standard of living and widespread illiteracy. In such a country family planning programme is just like an obstacle race which in order to win we have to jump over them. The main difficulties experienced in this programme, therefore, are:

(i) *Traditional Beliefs of our People*: In India industrialization is proceeding at a very slow rate. Thus the rural-urban ratio of population is increasing very steadily for the last eighty years. The percentages of rural and urban population were 89 and 11 in 1901 which changed to 76.27 and 23.73 in 1981. It is admitted that increase of population has nullified to some extent the shift from rural to urban sides. However, as we have said earlier, urbanization has been delayed because of slow industrialization of the country. Under this setting it is difficult to introduce new ideas in the minds of rural masses which continue to be tradition-bound. The ignorance of the rural population about the social and economic causes of their low standards allied with their quasi-religious belief that child is God's gift still convinces one that the force of tradition has not been weakened. The Extension Approach which we are following in our family planning campaign has as one of its objectives to convince people about the efficacy of a small family and its advantages to the individual, family and community at large. The village extension worker should not therefore, be, a person who comes from a city and has no rural background. Preferably, influential village leaders should be given a chance for working as extension workers, so that they can easily identify themselves with the rural population and bring to their minds the real message of the family planning programme in their own local language and in a more convincing way than others. Local leadership, therefore, should be fully exploited in the cause of population problem. Thus a group of villages under the influence of local leaders may undertake the community educational work by group acceptance of the desirability of a small family. We cannot afford to wait till all our villagers are educated and understand the meaning of family planning but extension education approach, if it is community-oriented, may create social pressure towards the acceptance of small family norm thus weakening the traditional attitude for large families.

(ii) *Social and Demographic characteristics*: It will be wrong to say that the Government-sponsored family planning programme has not produced any awakening among the people. Though full evaluation of the programme is riddled with difficulties, numerous surveys conducted in the country regarding the attitude of the people towards family planning lead us to the conclusion that the right attitude has already been created. According to S.L. Ogale "The Knowledge, Attitude and Practice (KAP) surveys carried out in various parts of the country do give us glimpses of a new awakening. A large majority of people are convinced about a small family and are certainly receptive to the idea of having few children. But their knowledge of the methods and devices of family planning is sketchy and limited." (55)

On the contrary Ashish Bose argues that as the small family norm was "a part of the transformation of a traditional society into a modern society, it was not logical to expect that the illiterate Indian masses staying in primitive rural areas and depending upon agriculture, for subsistence would take to the modern idea of family planning and a small family norm other things remaining the same." (56)

The family planning programme has no doubt spread the message of small family to some extent to the masses but it is felt that there is no strong motivation on the part of masses to accept it as a way of life. When there is strong urge on the part of people for a small family they will do everything within their means to satisfy that urge. In India although the professed attitudes regarding family size have changed towards acceptance of a small family, in fact the actual family size still tends to be large. Prior to 'big divide' in 1921, Indians craved for large families because of fewer chances of survival of small children. The situation has significantly altered because of increased health facilities, new drugs, etc., but not enough to show that all the children born would survive to adulthood.

Infant mortality in India is still high. According to Thompson and Lewis infant mortality rates in India declined from 159 death per 1000 live births in 1938-1942 to 98 in 1956-1960. Even then as per their estimates 98 deaths per 1000 live births seem to be too high when compared with those of other countries of the world like England (23), United States (26), Japan (36), Ceylon (66) in the period of 1956-1960. (61) This is perhaps one of the impediments towards implantation of small family norm in the minds of majority of our people. Though the dreaded conditions of the past regarding infant mortality are not there, still the fear of survival of necessary numbers cannot be guaranteed as yet. High infant mortality in fact strongly motivates couples to have more children.

However, the figures given by Thompson & Lewis appear to be underestimates if we compare them with those published by Indian demographers like Agarwala who claims that the infant mortality rate in India during 1965-67 was around 120 per 1000 live births. (2) However, the two views can be reconciled if it is noticed that infant mortality in India was as low as 92 per 1000 live births but has subsequently risen to 130 in 1970. (59)

Moreover, with the increased cost of living and rise in agricultural wages, a large family is looked upon as more earning members and contributors to the family's income pool. The old notion that children are an additional investment while the parents are earning and that they would provide help on the farm and provide security in old age and sickness is still there in the minds of our rural folk and hence no strong motivational urge exists among them to limit the family size.

(iii) *Effectiveness of contraceptives*: Having seen that the Indian people are aware of the population problem, though to a limited extent, it is necessary to exploit their awareness by making them contraceptive-minded. It is not sufficient to make available simple and inexpensive contraceptives by 'Cafeteria' approach. The extension educators' task is to train people to use them effectively. The greatest problem in family planning in India is to motivate people towards the use of different contraceptives. Gunnar Myrdal is of the opinion that, "Both sexes must be motivated, and in the intensive stage of the educational campaign husbands and wives must be approached separately." (48) Motivation may start with women but it must immediately spread to the male sector as under the Indian conditions important decisions on family matters are taken by the latter. The 'clinic approach' has already lost its importance by the end of the Second Five Year Plan; therefore mobile clinics which can visit each village once a week or so to give contraceptive advice should be introduced immediately. Funds have been liberally provided by the Central Government for this purpose and our experience tells that large parts of these allocations have not been fully utilized.

We have today one Family Planning Centre for every 50,000 population in the urban area and one for every 80,000 to 1,00,000 persons in the rural areas with sub-centres for every 10,000 population. (40) This network of facilities can be conveniently utilized for contraceptive distribution among those persons who are in immediate need of the same.

According to experts what is needed in India, under the persent set of circumstances, is the elimination of fourth order births. Dr. Misra gives the following table to indicate the intensity of population problem caused by high percentage of fourth and higher order births.

TABLE 3.2

Family Planning and Order of Births

Order of Birth	*In millions*	*Percentage*
First	4.22	20.1
Second	3.70	17.6
Third	3.25	15.5
Fourth	2.75	13.1
Fifth	2.30	10.9
Sixth and more	4.78	22.8
Total	21.00	100.00

Out of a total of 21 million children born in India every year 9.83 million or 46.8 per cent are fourth and higher order births. An attempt to eliminate the births higher than the third will be a great solution to our population problem. This is the intention of the Government of India behind enunciating the policy of a small family of two or at the most three children.

How the fourth and higher order children impose a burden on our birth rate and thus aggravate our demographic situation can well be judged from the table below.

TABLE 3.3

The proportion of Fourth and Higher Order Births to Total Births in Selected Countries

Country	*Birth rate*	*Proportion to total births*			
		1st Order %	*2nd Order* %	*3rd Order* %	*4th & Higher order* %
England	16	40.0	30.0	15.0	15.0
Japan	17	38.0	30.0	16.0	16.0
U.S.A.	25	28.0	26.0	19.0	27.0
India	40	22.0	21.0	18.0	39.0

The preceding table throws light on the high percentage of fourth and higher order births in India which is 39 per cent, compared with some other countries with low birth rates and therefore the conclusion may safely be drawn that the real danger arises from the fourth and higher order births. In the interest of the country, therefore, it is highly advisable to curb these births.

"In India there are roughly 100 million reproductive couples who need family planning advice and service. Of these nearly 40 million have three or less number of children and 60 million have four or more children." (2) It is seen earlier that a total of 14.2 million reproductive couples have been converted in favour of family planning. This gives a percentage of 14.2, who have come under the programme. Dr. Agarwala, however, argues that the percentage of 14.2 should be brought down to its correct figure of about 11 because some of the sterilized couples and IUCD users have either crossed the age of 45 or have died. (2)

Hence the 60 million couples who have four or more children must form our first target. It was found, out of some surveys conducted in the country, that about seventy per cent of women who had four or more living children and who were thirty-five years of age and older were willing to learn about family planning methods. (2) The extension workers must, therefore, exploit this situation to the fullest advantage. If it is presumed that these women are sufficiently motivated and are not willing to bear any additional child, they may be supplied with the necessary information about the methods which will help in permanent stoppage of children like IUCD or sterilization, by means of mobile teams of workers and mobile clinics by carrying the message of family planning to their doors. This will have also a cumulative effect as the information obtained by the older women will filter down to the younger ladies of the family.

Unfortunately, in India there is no suitable contraceptive device which satisfies the tastes of Indian people. The misconceptions about sterilization are numerous that vasectomy means castration or that male sterilization leads to impotency; that sterilization reduces sexual desire and sometimes pregnancy occurs even after sterilization thus leading to certain social complications. (55) These are problems of motivation and pose a challenge to the social and extension worker.

The efficacy of the "loop" has been questioned now because of its side effects on Indian women. The side effects on them may be greater than and different from those known from studies conducted on women in Western countries due to the higher proportion of women in India who suffer from malnutrition. This is one of the reasons why IUCD lost its popularity only within three to four years of its introduction in India. IUCD insertion also requires a thorough medical check up prior to and after insertion. Considering the vastness of area, the shortage of medical practitioners and the absence of rapid and suitable training for auxiliary para-medical staff, the IUCD with all its advantages could not make headway.

The oral pill is still in the experimental stage. Its long-term effects are not fully known. What India needs today and that too most urgently is a "safer, simpler, more acceptable, inexpensive, and reversible contraceptive method....". (73)

Achievements of Family Planning Programme

We have noted that the family planning programme in India cannot be classified as a complete success. We have seen some drawbacks in the programme and some obstacles we have to overcome. The extension-target-oriented approach we are following at present along with community education aiming at group-acceptance of small family norm appears to be quite justified under the present set of circumstances. Much of our success depends upon the sense of devotion the extension workers have and their tactfulness in motivating the people, making available to them the chosen components of family planning services and ensure their proper and regular use. Of course, it is a huge task but it has to be accomplished in the interest of our future generations.

The administration of the family planning programme too must be subjected to some changes to avoid delay and red-tapism. The organizational set up should be reviewed. The family planning programme in India is administered by the States but the budget for the programme is allocated by the

Central Government which takes important decisions and communicates them to various states for implementation. It was seen earlier in this chapter that the Planning Commission had liberally placed at the disposal of this programme huge amounts from plan to plan and how the funds remained underutilized. This may be attributed to the lack of experience in the field of family planning programme as India was the first country in the world to adopt family planning as a national policy. (34)

Though the family planning programme is directed towards all the people, its services should be first made available to those who most need it so that the limited resources are not thinly spread over a larger population but concentrated only on those who can make best use of them so that permanent or quasi-permanent advantages are derived from them.

According to Dr. Agarwala, "the organizational set-up for the family planning programme should have speed and manoeuvrability, and should be devised from the bottom instead of from the top. Brain banks should be created at the Taluka, District and State levels; and social scientists, Government officers and social 'leaders' should be involved in decision-making." (1)

Attempts made by India in the field of family planning have received tremendous praises from international agencies and foreign experts. The United Nations Advisory Mission which visited India in 1965 in response to a request from the Government of India paid the tribute of calling the Government of India the first to adopt family planning as a national policy. There was, therefore, a general expectation that the birth rate in India would come down steeply. Thompson and Lewis also share the above view about an expected rapid decline of Indian birth rate when they enumerated the various causes which would have occasioned this downward trend. They further state that, "taking into account these and other seemingly favourable conditions, it is not surprising that many people believed that family planning with fewer births per family was likely to spread quite rapidly in India. However, it soon became clear that in spite of the fact that there was no organised opposition, religious or other, to the practice of contraception the campaign for smaller families was making little headway." (61)

From the above analysis it should not be concluded that the family planning programme has been an utter failure in India. Perhaps India's population would have been much larger but for the family planning programme. T.S. Mehta aptly remarks in this respect: "The 1971 Census of India has belied the conjectures of phenomenal rise in population made by the Experts Committee. According to the Committee's projection, the population should have been 561 million. India's population according to 1971 census was about 547 million. The shortfall of 14 million is therefore a safe measure that the impact of family planning programme had been more progressively felt than what was anticipated." (45)

The effect of family planning programme is mostly judged by the number of births averted during a particular period. Dr. Agarwala gives the following table of births averted from 1966-67 to 1970-71.

TABLE 3.4

Number of Births Averted by Various Family Planning Method

1966-67 – 1970-71 (in thousands)

Year	*Sterilization*		*IUCD*	*TOTAL*
	Male	*Female*		
1966-67	240	57	486	783
1967-68	407	79	531	1.017
1968-69	675	129	478	1.282
1969-70	928	205	387	1.520
1970-71	1.112	312	333	1.757

It can be seen from the above table that 6.3 million births have been prevented during the five year period from 1966-71 i.e., on an average 1.2 million births per year. It is also seen from the above that the births averted by conventional contraceptives are not accounted for. Thus according to Dr. Agarwala an average prevention of 1.2 million births per year results in a three-point decline in birth rate. Therefore, he argues that if the birth rate in 1965-66 was 41 per 1000 population, then it should be about 39 in 1970-71. (2)

Dr. Agarwala's calculations are on the lower side of the scale. On the other hand, Dr. Misra taking the Government statistics of averted births into account, concludes that by March 1972 about 10 million births were prevented. Of course, these estimates take into consideration the number of births averted by the use of conventional contraceptives. The progress made by the programme can well be adjudged from the following table:

TABLE 3.5

Progress of Family Planning in India from 1961 to 1981

In thousands

Method	*Year 1980-81 (Provisional)*	*1979-80*	*1976-77*	*1961*
1. Sterilizations	1,994	1,776	8,261	105
2. I.U.C.D.	602	636	581	—
3. Conventional Contraceptives	3,741	3,036	3,692	—
4. Abortions	330	340	279	—
5. Births Prevented				
(a) In a particular year	4,740	4,908	3,723	32
(b) Total from 1961	43,960	39,220	24,334	32

From the above discussion it can be safely gathered that the family planning programme in India is making its impact felt on the population but, of course, not as vigorously as it should.

Incentives and Disincentives

The system of incentives for performing a useful deed, action or task has prevailed from the most ancient times. Specially, incentives have been a part of education for years. Prizes, scholarships, free studentships, etc. are in the nature of incentives to encourage the students and to enhance their performance. Incentives are, therefore, inducements for better quality of work.

Experts on population problems are of the opinion that a system of incentives must also be introduced in the family planning programme in the country. S.L. Ogale warns us in the following terms: "......incentives are a supplementary short-term measure to meet the emergencies of the situation. And the word 'incentive' need not make us feel as though we are purchasing people or bribing them." (55)

The Small Family Norm Committee of the Government of India defines incentives as a compensation for meeting out-of pocket expenses. The Committee was of the opinion that in the long run the real incentive would be the benefit derived from the practice of small family norm. It emphasizes the need for incentives on the basis that it would trigger off action which is generated by mass communication and extension education techniques for group acceptance of small family norm.

Family planning being a state subject, each state is free to evolve its own strategies to achieve the targets set for them. Thus, "Madras State engaged canvassers for its vasectomy programme. Every canvasser who brought to the vasectomy centre a male person willing to undergo vasectomy was paid a fee of Rs. 10 while the person who underwent the operation was paid a bonus of Rs. 20. (34) There are advantages as well as disadvantages in engaging canvassers. In so far as they are persons who belong to a group much closer in terms of social distance—to the target population—than the salaried Government social worker, who identifies in dress, speech, and aspirations with the middle-class civil service, it is a great advantage to the family planning movement. Some of the disadvantages of the system of canvassers are that they are persons who are motivated solely by pecuniary incentives rather than a concern for family welfare and in many cases they bring to the camps, men who are bachelors or persons having less than three living children by misrepresenting the nature of the operation and sometimes swindle the patient out of all or part of his compensatory grants.

Dr. Misra is against the camp approach, because he feels that the camps "undermine the extension approach". According to him vasectomy camps have been organised in different States with an eye on achieving the targets and cases are brought to the camps by the revenue and development personnel "who have better rapport with the villagers and who have some authority to penalise the villager if need be." He further adds that, "Follow up of cases of the camps has been a neglected area so far which can again cause a backfire to this camp approach" (73)

Along with incentives there is also the system of disincentives with the objective of deterring individuals from having a large family. In this connection S.L. Ogale says: "I am rather hesitant to call them disincentives, because they are not 'disincentives' in the real sense of the term. They do not mean denial of any right, but withdrawal of concessions in the interest of the society." As an instance he quotes, "Instead of giving maternity benefit of Rs. 30 under the Employees State Insurance Scheme, irrespective of the parity of the concerned case, it would certainly be worthwhile if lower parity cases are given higher benefits and vice-versa." (53)

Many suggestions have been advanced by different writers on the system of disincentives to discourage child-bearing. They are in the form of early marriage tax, child-tax, relaxation of income tax rules in favour of unmarried persons and small families, etc. However, on a detailed analysis it is seen that it is the economically lower classes that breed faster and the burden of such a system of taxation would be on them, leading them to still greater poverty. On this point, Gunnar Myrdal remarks, "since having many children is a main cause of poverty, such measures would penalize the relatively poor and subsidize the relatively well off. Such a result would not only violate rules of equity but would be detrimental to the health of the poor families, and so of the growing generation." (47) Therefore, it can be seen that incentives combined with disincentives should be administered with a strong dose of caution.

Cost-Benefit Ratio

The returns from family planning programme begin from the moment births are prevented. The age structure of population takes at least a decade to manifest changes caused by the reduction of fertility.

The benefit derived from the use of different methods is not the same nor is the cost incurred in each of the methods. It is well-known that sterilization is more effective than IUCD and the latter more effective than the conventional contraceptives. The cost-benefit ratio for each family planning method and for the programme as a whole at state or national levels can be calculated by linking the benefit of a birth averted to the relevant cost per birth averted." (73)

The following table gives the cost-benefit ratios for each method and the programme as during 1970-1971.

TABLE 3.6

Cost-Benefit Ratios

	At 10% discount	*At 5% discount*
Sterilizations	1:18	1:23
IUCD	1:17	1:19
Conventional Contraceptives	1:8	1:9
For the programme as a whole	1:16	1:20

Of the three methods of family planning the cost-benefit ratio for sterilization is higher than that for IUCD. Least returns are obtained from the conventional contraceptives.

Dr. Agarwala estimates "that rupees fifty spent on family planning in India has the same economic effect as of Rs. 500

invested on the economic development of the country. It has also been estimated that roughly Rs. 300 crores are spent annually on the maintenance of 20 million children born each year in India. If it becomes possible to observe 'birth holiday' for a period of 5 years, additional domestic resources to the tune of Rs. 1500 crores or equal to roughly one-tenth of the total outlay of Rs. 16,000 crores envisaged in the Fourth Plan would be forthcoming." (1)

This is a clear picture of how much of our scarce resources become locked up in the cycle of population growth. They could have been very well utilized to strengthen our planning programme, so that less dependence could be placed on foreign aids and deficit financing. Unfortunately, 'baby boom' in our country eats away a sizable part of our national resources and does not permit us a rise in our standard of living.

Thompson and Lewis referring to India and other developing countries ask in despair: "How can the great mass of the people of India (or any other underdeveloped country) be made to realise the necessity of controlling the size of the family as long as they live in small villages where traditional patterns of behaviour are so firmly entrenched ?" (61)

This is a question to which we, in our country, should find an immediate answer. In our discussion in this chapter, we have seen that the message of family planning is gradually reaching the masses living in the villages. The census of 1971, though it has made a net addition of 108 million people in a decade has belied, as indicated earlier in the present chapter, the fears of Experts Committee that our population would rise to 561 by 1971. The shortfall of 14 million can be mainly attributed to the family planning programme. This should not make us complacent as the problem still persists. Greater efforts on the part of the social workers and co-operation on the part of people at large are needed to face boldly this most important national problem. In an exclusive interview with Khuswant Singh, the Prime Minister Smt. Indira Gandhi when asked about the population problem of India replied: "We have done quite a lot to limit the size of families; we could have done more, but I don't consider the population problem with grave anxiety." (75) It is difficult to judge what was in the Prime

Minister's mind when she uttered the above words but the population problem has now reached such a stage that it has to be viewed with grave anxiety.

Measures for the Success of Family Planning

Recently, two conflicting views have been presented regarding the acceptance of family planning. One of them, is that economic hardship on the parents will make the idea of family planning strong in their minds. Thompson and Lewis when expounding this idea say, "Perhaps the most hopeful sign that conception control will spread fairly rapidly in the future in many underdeveloped countries is that more and more parents are beginning to complain of growing economic difficulties in raising their families......It would appear that this better understanding of family economic difficulties would supply a new and increasing powerful motive for keeping families relatively small." (61) The challenge to the social workers and extension educators lies in making the people realise the intimate relationship between the economic hardships and large families so that parents get convinced of the need to limit the families. Economic difficulties by themselves cannot be a source of motivation to illiterate and ignorant masses who have for years lived on submarginal standards of living but cause-effect relationship must be made clear to them. It is a difficult job and it should be done with the greatest tactfulness by all those engaged in the field of family planning and interested in it.

The second view regarding acceptance of family planning is that cultural setting in many developing countries and communities is such that the modern techniques of contraception would be difficult to introduce without a certain amount of socio-economic development. This situation was present among the Western countries where family planning programme had an element of voluntary acceptance and not dictated by any official policy as such. Developing countries like India are, by force of circumstances, compelled to declare an official population policy with Government-sponsored family planning programme because they could not afford to wait to reduce the fertility rate as per Western pattern. At the same time we cannot rely on general education alone to change people's attitudes in favour of small families.

What India needs to do at the present juncture is to continue the family planning programme with more vigour. Enough funds have been provided from plan to plan as seen earlier in this chapter but unfortunately they have not been fully and effectively utilized. Greater co-operation between the Centre and States, improvement in the administrative machinery and increasing the extension base of the programme are necessary. Family planning programme is an educational and motivational programme. The message of family planning is gradually reaching the masses and people are becoming aware of the disadvantages of large families. This awareness must spread like wild fire to the remotest and neglected corners of the country as they are the main contributors to the population problem. Family planning programme is the mainstay of economic development of India and on its successful implementation depends the future progress of the country. A multi-disciplinary approach is, therefore, essential. Family planning is a gigantic operation which requires the cooperation of medical doctors, social workers, demographers, economists, social scientists and administrators.

The experts participating in the Regional Workshop on Population and Family Education held at Bangkok have indicated three types of measures, to check rapid growth of population: (1) *Individual measures*: Late marriage, self-control, use of contraceptives and longer breast-feeding period. (2) *National Measures*: family planning programme, provision of clinical facilities, population education programme in schools, rise in the legal age of marriage, withdrawal of certain Government facilities to a family beyond a particular size and reward for family planners/promoters of family planning. (3) *International measures*: International organizations interested in population control; financial aid for national programme of population control; consultant services for planning national programme of population control; facilities for training personnel for population control and dissemination of information about population control in different countries. (62)

On international level India has taken the necessary assistance from international agencies in her efforts at population control. Even in the initial stages of family planning in India in the 1950's "the most valuable part of the family planning activities in India was intensive research, often carried out by, or in cooperation with, the United Nations Organizations or American foundations." (48)

The success of individual measures depends upon the level of general education attained and the sense of social responsibility an individual has which in turn is partly the result of sound education. In the words of John Ruskin: "Education does not mean teaching people to know what they do not know. It means teaching them to behave as they do not behave." (55) It is the responsible task of family planning workers to lead the people by motivating them and making them regular users of different family planning methods. Family planning has a very limited field of operation. It caters to the needs of married and immediately would-be married persons. The success of family planning is accelerated by the very fact that the new entrants in the reproduction field—married couples—should bring with them a sound attitudinal behaviour towards a small family. However, it is a fact that attitudes cannot be changed overnight; they are mostly formed in childhood when the child's mind is susceptible to acquisition of outside influences in an easy manner. Therefore, family planning efforts alone will not permit us to win the race. The battle has to be fought side by side on two fronts: family planning for the adults and education for children in population matters from the very childhood, in order to create in them a love for good and happy life by limiting their families when the time for such momentous decisions in their lives comes. The clinical approach needs to be supplemented by an educational approach also.

In respect of national measures of population control, fortunately the Central Government has given to the States a correct lead on all the fronts mentioned in the Bangkok Workshop. The population education programme in schools has been launched with the help of international agencies and it appears that within a few years it will make its impact on the school and college syllabi.

To sum up: The Indian Government has not been slow to understand the population crisis in the country. Steps to control population were taken as early as 1950 by enunciating a national population policy for the country. Liberal provision of funds was made for family planning programme, necessary administrative and extension education machinery has been set up. In India, extension approach seems to be the correct answer under the peculiar socio-economic condition of the country. It is now high time that this basic approach—extension approach—be properly oriented towards social groups and the whole programme be community oriented, because finally, it is the community in its own interest that will have to make the individual and the family accept the social norm of a small family.

4

Population Education

As seen earlier the most fundamental problem that faces mankind today is that of population growth. Charles Darwin in his famous book *The Origin of the Species* made the following observation: "Even slow-breeding man has doubled in twenty-five years, and at this rate, in less than a thousand years there would literally not be standing room for his progeny." (45) This statement would have thrilled the people of his generation but the later events undoubtedly have proved that he made an underestimate. The population situation has worsened as, among the developing nations, many countries are now growing ten times as fast as they did a century ago. (8)

As a result, "A child born today living through the seventies would know a world of 1500 crores of people. His grandson will share this planet with 6000 crores of people. In six and a half centuries from now, there will be one human being standing on every square foot of land on the earth, unless we are able to achieve our aim of reducing the birth rate." (8) This is a rather gloomy picture for the whole of mankind and united efforts are to be made if the impending disaster is to be averted.

The population scene is very bleak for the developing countries of the world and specially for those in Asia as this continent encompasses more than half of the total world population. India and China exemplify the problem of population in its most acute form and in absolute numbers they are two greatest contributors to the Asian and consequently to the world population problem.

The developing countries of the world are bent upon curbing the birth rate through national family planning programmes. Almost two billion people i.e., 79 per cent in developing areas live in countries where there is some Government support to family planning. But the success achieved by them has been of a limited character.

In India, "if we are to reduce the birth rate to 25 per thousand within the next ten years, the number of births prevented will have to be of the order of 60 million, of which 10 million, it is said, will be averted as a result of the programme so far." (8) This is a colossal task. Family planning programmes in India should continue with more vigour and dynamism with the community-oriented extension approach.

The implantation of the small family norm in the minds of the people who have already some fixed traditional values is not an easy task. It requires an understanding of the motivational basis underlying the large-family norm in different cultures. The family planning propaganda should take note of this fact if success is to be achieved. The initial success in the family planning programme in India has been due to the easy availability of acceptors who had reasonable standard of general education and were enjoying an adequate standard of living. However, if the programme is to achieve further progress it is necessary that the hard core of non-acceptors is permanently tackled. This requires a clear understanding of the motivational basis of their preference for large families. Referring to this, Prof. Jayasuriya aptly remarks: "It may be because of the neglect of this factor that in India during the past two or three years a plateau has been reached in the number of acceptors, in spite of an increasing deployment of personnel and money." (35)

There is, so to say, an inevitable time-lag between the perception by the people of an altered situation and the reorientation or change by them in their attitudes, values and behaviour to meet the new situation. Dr. John C. Cool calls it "cultural lag" and he cites a relevant example of cultural lag relating to family size: "During the period when man was primarily an agriculturist, he needed the strong backs and strong arms of many children to sow and till his farmlands . . .

with the movement of sizable population away from agriculture and into monetized, industrialized, and urban situations the economic advantage of large families has, in many cases, diminished. . . . Further, with the advent of effective death control during the past half century, there is no longer the necessity to keep women producing children upto the biological limits to ensure the survival of the desired number of children. Yet the values of most rural and recently urbanized people (and this includes a very high proportion of people now living in towns and cities) continue to be largely those developed under very different conditions." (7)

The family planning programme in India has an educational as well as motivational aspect. The extension approach which is being followed in the country includes both these processes. However, for many reasons, the progress of the family planning programme has not been satisfactory. It has now been recognized throughout the world that the married couples should be our first target, by way of family planning measures as they contribute immediately to the growth of population. But we should not lose sight of those young people who are on the threshold of married life and those who would enter the reproduction scene within one or two decades for it is the critical behaviour of these people that will ease or worsen our population situation. Attempts are therefore being made to bring these people under the fold of new population philosophy by injecting in them some awareness about the population problem so that they may rationally think about their future and take correct decisions on population matters when the time for such momentous decisions in their lives comes.

In this context, it is worthy of note that the population situation is not the sole concern of developing countries like India which are faced with 'population explosion' caused by ever-widening gap between static birth rates and rapidly falling death rates, but the developed countries like the U.S.A. are also giving serious thought to this problem by educating children and youth in population matters. But the focus of their attention is different as we shall see later on in this chapter.

Taking, therefore, only the case of developing countries with which we are more concerned at present we may conclude that the solution to the problem of population growth is to be sought by a two-pronged attack (1) by family planning methods in which the targets are the eligible couples in the reproductive span; and (2) children and youth who are likely to enter the reproduction field in a period of one or two decades from now. Thus, a new field of study has been opened which is presently known as 'Population Education' and which offers immense possibilities in easing the problem of population, in the long run.

I

POPULATION EDUCATION: DEFINITION AND MEANING

Population education also called 'education for population awareness' is of very recent origin having been first mooted in the 1960's. "So far it is still, for the most part, a collection of concepts and generalizations which are in the process of being given a definition, a shape, a content, a structure, and a validity for being brought within the purview of formal teaching." (73)

Several experts have attempted definitions of population education but a universally accepted definition is yet to be found. Let us examine, therefore, a few of them which have made their way into the literature:

Viederman defines population education "as the process by which the student investigates and explores the nature and meaning of population process, population characteristics, the causes of population change and the consequences of these processes, characteristics and changes for himself, his family, for society and for the world." (45)

According to Massialas, "Population education is defined as the teaching and learning of reliable knowledge about the ways of enquiring into the nature of human population and the natural and human consequences of population change." (45)

The definition given by Population Reference Bureau is as follows: "Population education seeks to bring about a realization of the individual, family, social and environmental effects of the explosive increase in human population, the rapid shifts in concentration and distribution of people, the implications of changing age and other demographic patterns, and the conceivable options that may be open to mankind to cope with the consequent problems." (45)

Thomas Poffenberger defines population awareness as "the communication of those aspects of population dynamics which indicate the significance of population growth in terms of its social, economic and political consequences for a given area." (35)

The above definitions cannot be said to be complete. It is difficult to reduce the content and objectives of such a broad field of learning into a concise definition. However, those who have tried to define population education have done so by laying some emphasis on some of the aspects of the subject. Thus in the above definitions it can be seen that no reference has been made to the goals of teaching population education.

Harold Howe regards population education as "the educational process by which a revision of attitudes towards family size is to be brought about. The process draws on the resources of a number of fields at all levels of education".

A more useful definition was produced at the UNESCO Asian Regional Workshop on Population and Family Education held in Bangkok in September-October 1970. The definition evolved was: "Population education is an educational programme which provides for a study of the population situation in the family, community, nation and world, with the purpose of developing in the students rational and responsible attitudes and behaviour toward that situation." (62) This may be taken at the present moment as a standard definition of 'population education' not because it comes from an international agency like UNESCO but as it encompasses in a nutshell the objectives, content and goals of population education.

Chauls states: "A population education programme should within the context of the student's culture, his society's population situation, and his individual perception of that situation, assist the student to arrive at a more rational comprehension of his population situation, plus the affective prerequisites to act on this increased rationality." (73) Intensive Training

Programme in population education conducted by the Department of Education of the Philippines in 1972 defines population education as the process of developing awareness and understanding population situation as well as a rational attitude and behaviour towards this situation for the attainment of quality of life for the individual, the family, the community, the nation and the World. (64)

Now, quality of life is a concept which evades definitional treatment and measurement. It is a fact that although no two individuals have identical views as to what constitutes quality of life, there are always common grounds or a consensus regarding the significance of the concept, the need to find out its broad parameters and an attempt, if possible, to measure them in quantitative terms.

There is a common feeling that quality of life encompasses not only the generally accepted items such as basic needs for food, clothing, housing, health, education and employment but also less tangible items like psychological, spiritual and aesthetic needs.

Prof. Sloan Wayland who is regarded to be the father of population education all over the world and who visited India in 1965 at the invitation of the Government of India explains the meaning of population education in the following terms: "Regardless of the terms used, we are concerned about the inclusion in the formal education system of instructional settings in which young people will come to understand the circumstances which have led to the adoption of family planning as public policy and to understand that for the family and the nation, family planning is possible and desirable. This would include an understanding of the relationship of population dynamics to economic and social development of the country and the implications of family size for the quality of life of the individual family. The particular instructional activities at any given school level and in any particular subject field would, of course, be devised in a manner which would be pedagogically sound and appropriate for the particular society." (50)

This appears to be a complete exposition of the meaning and scope of population education in today's context. Better quality of life for the individual, family and the nation is therefore the main strain of the above statement of Dr Wayland. Smt. Avabai B. Wadia, President, Family Planning Association of India referring to the population education says that it "is primarily an educational programme dealing with the influence of population trends on society and the individual. Education in population dynamics is not propaganda, or promoting a set of ideas but a way of conveying knowledge and creating awareness which will help, in course of time, to bring about new attitudes and behaviour patterns ". . . . Ultimately, the aim of population education is to help promote well-being and a higher quality of life, not for a few or for the priviledged, but for all humanity. And in that sense it is a subject that has relevance in every country, whether it faces a population explosion or not." (8) This again brings into focus the relevance of this new field of education to all the countries of the world whether they are fully developed or are in the process of their development.

The difficulty in suggesting a comprehensive definition of population education has led the experts like Dr. John Edlefsen to explain it in terms of objectives. In this sense he accepts the six specific primary objectives of population education compiled by Bhatia in 1969, which are: (45)

To achieve :

(1) Basic understanding of population dynamics including the growth rate and structure of population in the country in the context of world population.
(2) Appreciation of the significance of the population characteristics for the present and future quality of life including economic development and the attainment of high level of health, education, housing, diet and other amenities of life.
(3) Realization that the size of the family can be easily planned for the benefit of individual families and that large families are not necessary in the pesent day.
(4) Understanding of the health risks involved for the mother and the child.

(5) Appreciation of the small family as a setting in which a high quality of life for each person is more likely to be attained.
(6) Understanding of the Government Family Planning Programme in relation to the country's needs.

In the same way, the National Seminar on Population Eucation held at Bombay in August 1969 defined population education in terms of objectives: "The objective of population education should be to enable the students to understand that family size is controllable, that population limitation can facilitate the development of a higher quality of life in the nation and that a small family size can contribute materially to the quality of living for the individual family. It should also enable the students to appreciate the fact that, for preserving the health and welfare of the members of the family, to ensure the economic stability of the family and to assure good prospects for the younger generation, the Indian families of today and tomorrow should be small and compact with only two or three children." (50)

To sum up, we may say that it is not an easy task to produce a clear-cut definition of population education as it is relatively a new field of study. However, the meaning and its scope has been made explicit through the various objectives which have been laid down for the population education programme. In short, population education implies a change in the attitudes and behaviour patterns of the individual which enables him to make rational decisions on population issues involving the family, nation and the world at large.

It is high time, therefore to set ourselves into motion towards implementation of the population education programme howsoever it has been or may be defined. To quote Smt. Avabai B. Wadia, "One has the strong feeling that population education seems to be one of those areas of knowledge where definitions will probably follow the empirical programmes evolved rather than the other way round. It is, therefore, quite possible to move on the action programmes without spending too much time on perfecting theories." (73)

II

NEED FOR AND IMPORTANCE OF POPULATION EDUCATION

The curricula of schools and colleges under any educational system, mostly in a democracy, should be a reflection of the felt needs of the community. Basically, schools are social institutions and their existence is justified in so far as they satisfy social requirements. The children of today who are the future citizens of a country must be made aware of all the hazards of life they may have to face in future. As aptly said in the Bangkok report on Population and Family Educational: "If educational systems are to be relevant to the needs of their societies, they must address themselves to the problems faced by their societies. In nearly every country of the region population is one of most important of these problems." (62)

It has now been universally recognized that education in population dynamics is quite necessary for a well-rounded system of education the aim of which is to prepare young people for adult roles in future. It has been recognized by family planning experts in most of the countries where there are Government-sponsored family planning programmes that it is a difficult task to make the adult eligible couples regular followers of family planning techniques, partly because they are slow to learn as the idea of family planning has reached them in their adulthood when their attitudes and beliefs had acquired some rigidity. Therefore, the investments made are not so rewarding as they ought to be. In order to make a permanent impression on the minds of children it is necessary to make them understand the population issues while they are young, so that some healthy attitudes are created with due conviction and they may react favourably towards family limitation when the time for such decisions on their part comes. Population awareness is, therefore, to be created in them at the early stage of their educational life so that they may in future accept family planning as a way of life. Thus population education acts as a supplementary to the family planning programme.

On this issue Kamala Rao and D. Gopal Rao opine: "The investments and efforts will cost less but prove more effective and the learning quicker and more permanent if they are exposed to those ideas in their young age through the usual channels of formal education." (50) Population education, therefore, facilitates the work of family planners by inculcating in children and youth attitudes conducive to an easy success of family planning by undertaking the necessary spade-work. In this context Harold Howe states: "Population education is a moulder of attitudes and a creator of predispositions favourably to the planned families of reduced size. Once the ground-work of receptive attitudes has been created, the direct means of birth control and family planning education become more relevant to the individual and more likely to be used by him." (50) Population education, therefore, becomes a motivational instrument that will inject young people with a desire to follow family planning as a way of life.

The need for introduction of population education in the school curricula is also felt on the grounds that "over 45 per cent of our population is under 15 years of age" (45) and it is this group that will strongly influence the demographic scene of the country in the next few decades. It is the reproductive behaviour of this section of people that is of paramount interest for the progress of the country. The future growth of our population will depend on the attitudes and behaviour pattern which this group will acquire during the period of their education. If these people become cognizant of the factors of their population situation and feel that a more rational behaviour on their part is expected by the community on family size matters, then the worst consequences arising from population growth may be avoided. John Edlefsen touching this important point in respect of developing countries states: "These young people will constitute the major portion of the adult population of the world in the next three crucial decades, i.e., 1970-2000, and their reproductive behaviour will be of central importance to the efforts to control the rate of population growth. Yet in most countries throughout the world this group has received no attention in population limitation programmes." (6)

In this context, however, it is gratifying to note that the developed as well as developing countries of the world are now taking keen interest in this new field. According to the Population Council, New York, there are today more than twenty countries, representing every world area, developed and developing, that are in some stage of work in this new field. (69) India was the second Colombo Plan nation to officially endorse a national programme of population education. This decision was jointly accepted at the National Seminar in Bombay in August 1969 by the Ministry of Education and of Health and Family Planning.

Prof. Noel David Burleson of Harward University coined the term 'Population Awareness' "to refer to factual knowledge about population dynamics required to understand the nature and magnitude of the burden imposed by rapid population growth." (8) Being a strong exponent of population education he warns us against delay in introducing the subject in the school programme in these words: "Time is now . . . Awareness after the fact impresses me as the essence of all tragedy. . . Awareness before the fact is what usually passes for intelligence . . . The history of the twentieth century becomes more and more a race between numbers and the quality of life. If we are to utilize our intelligence in our present population dilemma, we must make our educational system relevant. Participants and those who are about to become participants in the vital revolution, then, will require an education that includes population education." (43)

Mass communication media like radio, films, public posters extensively used in the Government family planning programme are mainly directed to take the message of family planning to the remotest corners of the country and to reach the target groups of married adults. By their very nature, the mass media cannot select an exclusive audience and therefore cannot expose the young to the idea of family planning. Kamala G. Rao and D. Gopal Rao are of the opinion that, "The effects of this incidental exposure to such information can be more detrimental to individual development of the child and the socio-moral values than a systematic population education programme through formal education system." (50) Dr. Sloan Wayland is also of the opinion that the educational system has both an opportunity and a responsibility to integrate these non-school experiences in a constructive manner. (50) Therefore, the school system should take cognizance of the fact that the students when they come up to the school, have with them some sort of population awareness baggage gathered in various non-school situations, in a scattered way. It devolves on the educational institutions the delicate task to take complete stock of these items and place them in a disciplined manner, at the same time, creating in them further awareness about population issues.

It has to be recognised that such of the current interest in population education has sprung from the need to reduce the rate of population growth in many parts of the world where 'population explosions' have taken place. This is correct in the particular setting of developing countries where the greatest and the most urgent need of the hour is reducing the growth rate of population. It should also be realized that 'population education' is purely a Western concept and it has been evolved and developed to its present form in the developed countries of the World like the U.S.A., only because these developed countries found it useful and essential for their further development and ensuring good quality of life for their people. Smt. Avabai Wadia consolidates this in the following words: "What is most significant is that the developed countries with low birth rates who have hitherto felt that population planning was a necessity only in the poorer countries which had fast-growing populations, are also coming round to this viewpoint now, impelled by the need to prevent further destruction of the environment and to preserve an ecological balance." (73)

Population education is, therefore, an educational programme in population dynamics useful for both developing as well as developed countries though the contents or the approach to the central problem of population may take different shapes from country to country depending upon a number of socio-economic and cultural factors. "For instance, much of the interest in the subject and its theoretical development is taking place in the U.S.A., and that brings to the forefront the aspects related to pollution and an over-consuming society rather than to birth rates as such. Similarly, in

Latin America the interest in the different aspects of family life and sex education is most pronounced. . . . In India, it is the demographic-developmental link-up that is of paramount importance owing to the menacing growth of population." (73)

It may be concluded from the above statement that it is only the focus of attention on relevant aspects of the content that may differ between one country and another depending upon their stage of economic development, structure of its population, cultural background, etc.; but basically according to Viederman, "the characteristics of a population and the changes that occur in a population touch upon all our lives, whether we believe our country to be overpopulated or underpopulated." (45) Viederman justifies the need for population education on strictly educational grounds. Further on he suggests that if animal populations can be a subject of study in the biology course of study, then the study of human populations in science, social studies and humanities is also equally important. (45) From this he concludes: "Thus, population education is as valid for countries such as Argentina and Japan, where there is an assumption that more rather than fewer people may be necessary for reasons of achieving an adequate labour supply, or economic growth, or other national goals as it is for countries such as India and the United States who acknowledge in varying degrees their population problems."(45)

The delay in the introduction of population education into the educational system in India as well as in other developing countries is a matter of grave concern. Gradual introduction of this new area into the educational field is the greatest national urgency. A little delay intensifies the problem related with the growth of population. In this connection Prof. Jayasuriya remarks: "As needs can be postulated with varying degrees of seriousness, it is important to emphasize that population education is a matter of the greatest urgency in that the risks to the conduct of civilized life involved in the complex of problems associated with the growth of population are of such magnitude that every single day's delay intensifies them and increases the effort that has to be made to cope with them."(37)

Rapid growth of population presents an issue of momentous significance for mankind. Educational systems that make some claims of relevance to human issues cannot ignore it. This is the reason why Noel-David Burleson as we have seen earlier urged its inclusion in the school curriculum.

Warren S. Thompson and Philip M. Hauser were the first to insist on incorporation of population education into the school programme. (35) In fact, Philip M. Hauser lamented this population-gap in the curriculum and exhorted that information about population should be regarded as an 'essential part of a general education.' (35)

What society needs today in the field of population or rather the family size is that the younger generation of the present day should have an attitude different from that of the adults. To be explicit, it is expected to re-orient the attitude of youth towards a planned family of two or at the most three children. There is no doubt that the attitudes are formed in childhood and nurtured in the home atmosphere of the child. It is the home that functions as the moulder of the initial attitudes of the child which are further reinforced or remoulded by the school in the course of time. Pohlman after interviewing 1100 children reported that children reflected adult attitudes in the sense that when they grow up they would like to have a family of over four children and that over two-thirds of them wanted more boys than girls. (7) This is a clear reflection of the adult attitudes and the importance of population education for the younger generation. This warning has also been contained in the Report of the Asian Regional Workshop on Population and Family Education held at Bangkok in 1970. The Report says, "However over 40 per cent of the people in this region are still under fifteen years of age. This group will strongly influence the demographic situation in Asian countries in the next few decades. If their future population behaviour resembles that of their own parents, today's population problems will be viewed, by comparison, as only minor disturbances. If, on the other hand, these young people become cognizant of the factors of their population, situation, and recognize that they necessitate more rational behaviour on their part, some of the worst consequences may be avoided." (62)

In his inaugural speech at the National Seminar on Population Education held in Bombay in 1969 the then Education Minister Dr. V.K.R.V. Rao took a very broad view of poulation education when he said: "Population education is a subject by itself and should essentially be treated as a part of the much larger subject of human resource development, and be included in the educational framework in the light of this opinion." (50)

Whether in developing or in developed countries of the world, population education has a significant role to play. Population education should be all-pervasive if it is to be effective. Its scope should not be limited to classrooms only but as Dr. S. Cool suggests it "must go beyond the classrooms into the homes, the temples, the bazaars, the farms and factories and, indeed, into every aspect of human existence." (7)

In affluent countries of the world with a very slow rate of population growth it is not so much the population growth that is creating problems but the environmental damage caused by indiscriminate use of technological knowledge and the application of limited world resources for enhancing the standard of living that is causing the ecological imbalance. This situation has forced on them the need and importance of population education.

In developing countries where the rate of growth of population is very high, the need for small family norm is the most urgent. So, population education is a dire need of the moment for all the countries of the world. Thus, as Smt. Avabai Wadia says, "this new philosophy of living, based on the ideal of planned families, where there is concern not only for individual well-being but for the welfare of society as a whole, is becoming essential." (51)

III

OBJECTIVES OF POPULATION EDUCATION

The importance of formulation of clear-cut objectives of any educational programme has been recognized nowadays by educationists. Unless the objectives are explicit and practicable no definite programme of education experiences can be laid down. Population education being a new field of knowledge the necessity of spelling out objectives for its teaching is even greater. Explicit goals are necessary to guide learning. Unguided educational situation may produce a variety of effects some of which may be desirable and others not desirable.

In a teaching-learning context, the objectives set the directions which are to be followed to make the educational process effective. Thus the objectives laid down are subject to change from time to time in the light of experience gathered in their implementation. Similarly, no permanent or fixed or common objectives can be formulated for a population education for all the countries of the world. This is because each country is facing population problem in a somewhat different form. Secondly, educational systems of different countries have their own specific goals which have a relationship with their national educational policies. Moreover, the traditional and cultural values which different societies entertain are not the same.

The objectives of population education have been defined in different ways by many writers. Therefore, we shall now consider some of the main objectives framed by important educationists and national and international organizations.

Dr. Wayland while dealing with the goals of population education remarks: "The program should develop an appreciation by the individual of the consequences for his family and society of his own actions and attitudes, and on the other hand it should develop an appreciation of the consequences for the individual of the population changes that are occurring in his community and nation." (70) The individual, therefore, has a double role to play: he must understand that his own actions have an influence on others as well as that population changes deeply affect his well-being: The vital role of population education is to create this awareness in him.

According to Prof. T.S. Mehta two steps should be observed in the formulation of objectives of population education. The first is a critical study of the existing school curriculum and the second would be the clarifications of the concept of population education. Based on this a point of view suited to the needs of the country and in tune with the prevailing school programme should be developed. (45)

In India the objectives of population education were expressed for the first time at the National Seminar on Population Education in Bombay in 1969. Dr. V.K.R.V. Rao in his inaugural address warned the participants in the following terms: "We must be taken to see that the objective of population education is of a long term character as far as its relation to family planning is concerned and nothing should be done which should create psychological problems either in regard to the children themselves or their relation to the individual families, of which they are a part." (50)

The members of the National Seminar were of the opinion that the growth of population was a major challenge before the country and that population education should be an integral part of education at all levels. The Seminar recommended that "the objective of population education should be to enable the students to understand that family-size is controllable, that population limitation can facilitate the development of a higher quality of life in the nation and that a small family size can contribute materially to the quality of living for the individual family. It should also enable the students to appreciate the fact that, for preserving the health and welfare of the members of the family, to ensure the economic stability of the family and to assure good prospects for the younger generation, the Indian families of today and tomorrow should be small and compact, with only two or three children." (50)

Kamala Rao and D. Gopal Rao feel that there is great need of developing systematic objectives of population education and they object to having just one set of objectives and suggest that such objectives could be spelled out at three different levels; (a) policy level objectives; (b) implementation level objectives; and (c) instructional objectives.

Out of these three kinds only the policy level objectives can be considered at the present stage of our discussion taking them as general objectives of the population education programme.

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As spelled out by Kamala Rao and D. Gopal Rao the policy level objectives are: (50)

(1) To develop a methodology of influencing the young through schools and adults through other educational agencies to appreciate the population goals as laid down by the Government.

(2) To develop in school and college students and teachers an appreciation of the magnitude of population growth as a national problem and its implications for the nation, society, family and the individual.

(3) To stabilize the efforts and achievement of the present population programme through a systematic process of internalisation of the small family norm among the younger generation (the future parents of India).

(4) To involve the formal educational system—its traditions, curricular techniques, teacher training programmes, etc. in imparting a systematic content on population education at the different stages of school and college education.

(5) To assess the broader implications of the introduction of population education for parents, teachers, schools pupils and society.

The above objectives appear to be all comprehensive and are broad-based as they focus attention not only on the younger generation but on the whole of society. However, they do not lay explicit stress on the improvement of quality of life which, as we have seen, should be the main aim in imparting population education.

According to Dr. Cool the goal of population education is "the creation of society in which each individual will have the freedom, the health, and the resources to fully develop his own potential as a human being." (7) Fundamentally, Dr. Cool agrees that population education is but a part of human resource development, the view that was expressed by Dr. V.K.R.V. Rao at the National Seminar on Population Education in Bombay in 1969. (50)

Smt. Avabai B. Wadia is of the opinion that some of the objectives of population education would cover the following: (7)

(1) Creating among the younger generation an understanding of one of the most important phenomena in the modern world, namely, rapid growth of population, its causes, trends and some of the fators affecting it, and ways of regulating it.
(2) Studying the influence of population trends on the various aspects of life—social, cultural, economic and political—and in particular, the close inter-action of population growth and the development process, with particular reference to the national programme to raise the standards of living.
(3) Recognising the fact that scientific developments are enabling us to get increased control over famine, disease and untimely death, and similarly control over unplanned births also, this body of knowledge has to be utilized to correct violent imbalances between the two, and to create stability.
(4) Realising the significance of population growth on individual and family life, and encouraging attitudes of responsibility and mutual help and co-operation in all aspects of personal and family living.
(5) Appreciating the fact that for preserving the health of the mother, the welfare of the children, the economic stability of the family, and the future prospects of the younger generation, Indian families, today and in the future, should be small and compact, with not more than two or three children.

It can be seen from the above statement that the objectives of population education formulated by Smt. Wadia cover all aspects of Indian life in so far as population problem is concerned. They also lay specific stress on the health of the mother which should be an important aspect of any population education programme. In this connection Prof. P. Visaria rightly points out: "India is one of the very few countries in the world where females enjoy a lower expectation of life at birth than males. The intrinsic biological superiority of females is thwarted in India by our failure to pay adequate attention to their health and well-being and this situation must change." (8) It appears, therefore, that the objectives formulated by Smt. Wadia are more suitable to Indian situation.

Dr. Edlefsen while explaining population education in terms of objectives cites the following ten specific objectives compiled by Tjokrowirono (Indonesia) but abridged by him. They are: (45)

(1) To understand the basic principles of demography.
(2) To learn about the causative factors of rapid population growth.
(3) To understand the impact of rapid population growth.
(4) To understand the close relationship between the people's well-being and socio-economic development.
(5) To understand the meaning and significance of environmental harmony.
(6) To learn that family size can be controlled as opposed to fatalism.
(7) To understand the significance of the small family 'norm' and its relation to the quality of living.
(8) To understand the far reaching consequences of population density and rapid growth to one's self and one's environment.
(9) To realize that human behaviour has a direct influence on the social structure and on social change.
(10) To change attitudes and instil a sense of responsibility towards the welfare of the nation and world.

The completeness of these objectives cannot be doubted and if they are attained the students will have instilled in them an understanding about the most powerful phenomenon of the modern age i.e., population explosion, its causes and consequences and the manner to face it boldly in the interest of world well-being and harmony. The students should realise that "population growth is a phenomenon which is responsive to human direction." (45)

UNESCO is the international agency which has taken a good deal of interest in the field of population education. In the background papers to the Second Asian Population Conference held at Tokyo from 1-13 November 1972 under the auspices of UNESCO Regional Office for Education in Asia, Bangkok, the objective of population education has been defined as "to give the learner an insight into the totality of issues connected with population, ranging from the nature, measurement, causes, determinants and consequences of population growth as well as of urbanization both at the micro-level of the family and at the macro-level of the community, the nation, or the world at large to the dynamics of the reproductive process, and finally to the possibilities of planning family size and population growth."

The above statement on objective of population education in a consolidated form is a corollary of the recommendations of the Asian Regional Workshop on Population and Family Education held in 1970 at Bangkok in which the objectives of population education for the Asian region as a whole were laid down for the first time. It will be of interest, therefore, to review them in more detail. The Regional Workshop formulated seven general objectives of population education; besides, a brief content elaboration was also given. For our purpose we shall see only the objectives in general. They are to assist the pupil to acquire knowledge of: (62)

(1) Basic demographic concept, process and methodologies.

(2) Static and dynamic description of the population situation at the micro-and-macro levels.

(3) The determinants of population growth.

(4) The consequences of population growth.

(5) The human reproductive process as a basis for understanding human fertility.

(6) The national and international population policies and programmes.

(7) Rational and responsible attitudes and behaviour toward family size and national population programmes.

IV

CONTENT OF POPULATION EDUCATION

In order to find out what should be the content of this new field of education known as population education it is necessary to delimit to some extent the field of population education. Even though no rigid boundaries can be placed in the field of knowledge where many areas are likely to overlap, but this is done for the sake of convenience and ease of treatment of the subject. Therefore, a clear idea about the vast field of the subject of population education is essential.

There is worldwide confusion about the relationship between population education and sex education. To quote the authoritative opinion of the Asian Regional Workshop on Population and Family Education referred to earlier "...A study of some sex education literature suggests the following as its major components:—human physiology and reproduction—contraception-social interactions associated with human sexuality." (62) The Regional Workshop was of the opinion that the goals of the programmes namely population education and sex education differed substantially."

We owe the term 'population education' to Dr. S. Wayland who is one of the pioneers in this new field of population study. (45) Dr. Wayland was interested in introducing population studies in school curriculum. But he noted that the terms 'sex education' and 'family life education' which were in vogue in the West for many years had been used by some to encompass this new field of population studies. He was not in favour of using these terms as the substantive content and focus in the new field were different. Besides, he thought of a term which did not evoke 'negative responses' as was the case with the term 'sex education'. This was the reason why the term 'population education' was suggested by him. As regards the content of this new field his views were: "...We are concerned about the inclusion in the formal educational system of instructional settings in which young people will come to understand the circumstances which have led to the adoption of family planning as public policy and to understand that for the family and the nation, family planning is possible and desirable. This would include an understanding of the relationship of the population dynamics to economic and social development of the country and the implications of family size for the quality of life of the individual family." (35) Among the six basic topics given by Wayland as forming the content of population education he includes 'development of basic understanding of the process of human reproduction'.

Prof. Noel-David Burleson uses the term 'population awareness' which appears to imply a narrower scope than that envisaged by Wayland. Thomas Poffenberger too uses the term 'population awareness' and defines it as "the communication of those aspects of population dynamics which indicate the significance of population growth in terms of its social, economic and political consequences for a given area." (35) From the definition given by Poffenberger it is clear that 'population awareness' has a more limited scope than population education which besides the inclusion of material for population awareness has for its ultimate aim individual and social welfare.

UNESCO appears to favour the term 'population and family education'. This can be noted from the theme of Bangkok Workshop of 1970 which was titled 'Asian Regional Workshop for Population and Family Education'. However, the adoption of the term 'family education' implies that the whole area of family relationships must be included though much of it has no relevance to population matters.

According to Viederman population awareness education "differs from sex education and family life education, where the focus is primarily on the individual, by viewing the individual in the context of the broader society, relating his actions to the broader concern. And it is this linking of the individual to the broader society that forms one of the important elements in the entire process of development." (45)

Even in the West many years were required for the family life phase of education to gain a respectable place in the curriculum of the schools. Formal courses relating to all facts of family life have been included now into the curricula of public schools. "The earlier history of the introduction of the family life education as part of home science and home economics imply that more academic and curricular considerations consistent with the overall objectives of education guided its introduction in school subjects." (50)

The concept of family life education centres around the individual's adjustment to family situations and his shouldering of family responsibilities. The accelerated movement for its introduction in schools was motivated by the increased demand from college students who needed help in making their life adjustments and from parents because of steady increase in premarital sex relation and teenage marriages. (50)

Conceptual confusions and diverse interpretations of the concept of population education arise partly from terminological confusion. The terms like 'sex education', 'family life education', 'contraception education' have been used as synonymous with population education. In this regard it was made clear earlier in this chapter that the focus of these first three concepts is the individual, whereas population education centres round the individual and the society and the interactions between the two. Population education is a comprehensive and all inclusive concept though it has come up only recently. These three concepts refer to some aspects of population education and not the totality of it. The fields of study of 'family life education', 'sex education' and 'contraception education' often overlap. In spite of this population education emerges as an independent subject of study, with greater field area and larger educational possibilities.

Interest in sex education had developed in the advanced countries of the world though there was in them an extensive practice of family planning, relatively low rates of population growth, prevalence of nuclear families, and movement for emancipation of women. It was because of certain characteristics of the social structure and the special problems associated with it that sex education had its way in Western countries. According to Pohlman and Rao "In Western countries parents and school authorities tolerate sex education largely because of fears of venereal disease and premarital intercourse and pregnancy and their faith that sex education will be a chance for the older generation to influence young people to avoid these." (41)

'Contraception education', known also as 'family planning education', has a distinctive role from population education. Family planning education can be defined as education in the techniques of conception control and birth control that make it possible for an individual family to have no more children than it desires. (37) The aim of family planning education is essentially one of immediate practicality and its targets are the married couples and those about to be married. The population education and family planning education have a certain complementariness of functions. Once the ground-work of receptive attitudes has been created by population education, "the direct means of birth control and family planning education become more relevant to the individual and more likely to be used by him. Population education must be one part of a national effort to reduce population growth. Contrasted with family planning and birth control, its role is long range and diffuse and its approach is interdisciplinary, multi-level and continuing." (50)

Taking these facts into consideration and in special sex education as viewed by Pohlman and Rao, Wayland contends that in developing countries the social network and control make premarital intercourse much less of a problem so that sex education is not important. (41) Secondly, Wayland warns of the dangers of adopting the pattern of sex education by the developing countries following the blind analogy of the West. (50)

Many Indian educationists do realize the importance of sex education and argue that "some sort of sex education without introducing instructions in the available practice of birth control may be useful, but considering the present unpreparedness of the country to respond to modern ideas especially in rural areas, where the need for family planning and consequently that of population education is uppermost, the educationists have to set about the task with caution and introduce progressively these new concepts in the educational content." (50)

The terminological difficulty about this new field of population study has ended, at least for the time being.

In order to give a nomenclature adequate to the coverage and content of this area of study Wayland suggested the use of the terms 'national and family population education' and 'population education' for short including in the content such elements of family education and sex or reproduction education as are logically related to population issues. Therefore, let us turn our attention to the possible contents of population education.

Components of Population Education

The contents of an educational programme are largely derived from the set of objectives to be attained by implementing the programme. The specific form which the content of population education may take in a particular country depends to a large extent upon considerations of national population policy and the characteristics of the educational system of that country.

In the context of developing countries, with which we are more concerned in our present study, the objectives of population education may be much in agreement with those laid down by the Asian Regional Workshop, 1970, to which a reference has already been made when discussing the objectives of population education.

We have also noted the difference between 'sex education', 'family planning education' on one hand and 'population education' on the other, in respect of their objectives and goals. Naturally, there will be difference in their contents too. To quote Harold Howe "Population education is not family planning or birth control education. . . . Population education is merely instruction in the dynamics of population without the emotionally charged areas of sex, birth control, and family planning. . . The content of population education is more palatable and less controversial for both teacher and the taught than birth control and family planning concepts." (50)

After delimiting the field of population education from those of sex education, family life education and contraception education, we may visualize to some extent the possible educational content for this new field of population study. It is not our intention to devise a course of 'sexless population education' as thought out by Pohlman and Rao who advocate that 'sexless' population education is possible and, for which, they suggest the following topics: (1) population dynamics and the problem of over population; (2) advantages of small families; and (3) advantages of late marriage without discussing sex or contraception in any way. They further state that the Population Instructional Materials Project of Teachers College, Columbia University had prepared detailed materials showing how that could be done. Pohlman and Rao admit that an understanding of sex gives a more complete picture but at the same time they say that it is not essential. They also cite the names of Burleson and Wayland, authorities in population education and add that they have written about and demonstrated programmes that do not involve sex and contraception directly. (41) However, it is a fact that certain elements of family life education and sex education are included in the Wayland's concept of population education. Thus Wayland is not for 'sexless' population education as advocated by Pohlman and Rao. The objective of a course on population education would be, as Prof. Jayasuriya says, "to give the learner an insight into the totality of issues connected with population, ranging from the nature, measurement, causes, determinants and consequences of population growth as well as of urbanization both at the micro-level of the family and at the macro-level of the community, the nation, or the world at large to the dynamics of the reproductive process, and finally the possibilities of planning family size and population growth," (35) Therefore, those aspects of family life education, sex or reproduction education which are logically related to population issues should find their place in any content of population education.

The Asian Regional Workshop 1970, considered "the determinants', 'demography' and 'the consequences' as the bases of any population education programme. Besides, two other elements namely 'human reproduction' and 'population policies and programmes' were also considered as relevant to population studies. (12) The first three form the core of any population education programme, while the last two are usually regarded as the integral parts of what is known as 'sex education'.

However, these two may be added to the core concepts to make the population education programme more comprehensive and may be utilized according to the needs of a country. Since the aim of population education is to develop in the students right attitudes on which to base their decisions regarding population behaviour in future, the knowledge of the first three elements of population education is found essential. Let us examine therefore in more detail these important components of population education:

(i) *Determinants of population growth*: The determinants or causes of population growth are an important factor which should be known to the students in order to make them understand the different aspects of the population problem. The Final Report of the Asian Regional Workshop, 1970 states in this respect: ". . . . the factors which motivate people towards their population decisions are not clearly known. It was recognized, for example, that in many societies a social norm exists tending to favour the development of large families. How this standard of behaviour has developed, what its components are in a given society, and how it may be changed, are only vaguely understood. Similarly, other determinants of fertility, mortality and migration behaviour are less clearly comprehended than are the consequences of population growth. The interactions of the different types of determinants further complicate matters." (62)

In spite of these difficulties the Regional Workshop considered the inclusion of the determinants of population growth as an important component of population education content because the knowledge of population matters is to be imparted and attitudes are to be developed in students so that they may base their own more rational population behaviour on them. The factors that motivate people towards population decisions are not so simple to be analysed. They have their roots either in tradition or culture of a place or in their religious beliefs or even in economic conditions of the people. They jointly evolve some social norms which in order to be changed require a deep study of the causes which made the establishment of such social norms necessary in the past and their continuance in the present times. Therefore the knowledge of determinants of population growth must be an essential part of a population education programme.

(ii) *Consequences of population growth*: The Final Report of the Asian Regional Workshop 1970, states: "It was discovered that the most pervasive elements of existing definitions or objectives were the consequences of rapid population growth." (62) This factor directly affects both the individual and the nation and it is readily understood. It can be studied with case both at the macro and micro levels. At the micro-level, factors such as food, health, employment opportunities, housing, education and recreation may be emphasized. At the macro-level, the effects of rapid population growth on economic and social development may become vital components of population education. Similarly, as Prof. Mehta points out: "Ecological consequences—pollution of the environment endangering balance in nature—are equally important." (45)

(iii) *Demography*: It serves as the link between the determinants and consequences. "In order to assess changes in fertility and migration behaviour, and in order to predict their consequences, it is necessary to be able to measure these changes." (62) The students, therefore, must be acquainted with the basic demographic tools such as census reports, birth and death rates and age pyramids in order to understand the current situation with reference to the past so that they could have some idea of the future. Similarly, they should be in a position to analyse local, national and worldwide trends of population growth so that they understood the meaning of population explosion in its true perspective.

(iv) *Sex Education Components*: The above three elements of the population education programme are more or less universally accepted but when the question of imparting what is commonly known as 'sex education' comes up the educationists are not in total agreement. We have seen earlier in this chapter the basic difference between 'sex education' and 'population education' in so far as the objectives and the areas of the two are concerned. However, there is a considerable overlapping between the two. In order to avoid more confusion Prof. Mehta tries to spell out 'sex education' in terms of its major components. The major components are: (45) (a) human physiology and reproduction; (b) contraception; and (c) social interactions associated with human sexuality. In this respect the Asian Regional Workshop, 1970 noted that a basic understanding of the physiology of human reproduction was an essential component for rational and responsible decision-making. (62)

In India, 'human reproduction' has been a part of biology courses for many years much before the advent of sex education. Therefore, in this sense 'human physiology and reproduction' can be safely included in the school curricula as a non-controversial element. This will help children to learn the phenomenon of reproduction in a more scientific way than to learn it inaccurately and accidentally through exposure to outside influences. There is no doubt that in formal education it is necessary and there is due place for imparting knowledge about human physiology and reproduction in population education. However, care should be taken in the manner of the inclusion at the school level and the way it is handled by teachers in the class-room. As Prof. Mehta aptly remarks: It is all a matter of presentation. Knowledge about the human reproductive system can be imparted to the child without destroying what the traditional moralists would call his or her innocence.

As regards the other two major aspects of sex education i.e., contraception and social interaction associated with human sexuality, the extent to which they may be declared as controversial or non-controversial depends upon the economic and social development of a country and its cultural background and each country may include it in its school curriculum according to its needs and the readiness of the people to accept it. The Asian Regional Workshop, 1970 was also of the opinion that "knowledge of the possibility of voluntary fertility control be noted as an addition which countries may wish to make to this list. It is not, however, central to population education." (62) Prof. Mehta admits that in some Western countries and in Japan these two content elements are emphasized in educational programmes but by and large it may be true for a majority of Asian countries that they are not in favour of including them in population education in schools.

Therefore, it is quite proper that a country which intends to introduce these two aspects of sex education in its school curriculum shall have to take some precautionary steps prior to their introduction. In the opinion of Prof. Mehta they are: (45)

(a) Studying the needs of the community—its cultural constraints, social norms, etc.
(b) Ensuring that the programme is in the hands of competent people and has the backing of competent opinion.
(c) Instituting pilot projects and a process of evaluation before launching an extensive programme.

These steps must be followed by those countries where there are strong objections for the introduction of the above given aspects of sex education as it is felt that population education in its complete form may include these two facets of sex education. But as their immediate and hasty inclusion is wrought with practical and psychological difficulties, gradual and precautionary measures are absolutely essential. The Asian Regional Workshop warns us in the following terms: "Thus, for each country, it may appear necessary to separate the topics into two categories, refer to the non-controversial ones as population education and devise a separate title for the others . . . the attempt to include such controversial topics in population education may, in effect, destroy the entire programme before it has a chance to prove itself. Since there is no real proof of the relevance of any of the listed topics toward the achievement of population education's goals, it may be advisable to exclude either temporarily or permanently—any topics which may endanger the programme's very acceptance and implementation." (62) This is indeed a serious warning, specially for developing countries like India, South Korea, the Philippines, Ceylon, Taiwan, etc. where programmes of population education are making a strong headway.

(v) *Population Policies and Programmes*: In each country pupils should be aware of the nation's policy on population as well as the implications for the local community of any programme initiated on a national level. They should also get acquainted with the population programmes in other countries and international assistance to such programmes. Therefore, all these aspects must find place in the population education in order to make it a well-rounded programme.

Prof. Jayasuriya gives broad areas within which the content of population education appears to fall. (35)

(a) *The Collection and Analysis of Population Data*: Under this he considers methods of collecting population data: the demographic processes of birth, death and migration; calculation of birth, death and growth rates, the age structure of a population and the causes underlying different kinds of age structures; determinants of fertility, morbidity; and mortality trends in population growth; refined indices of fertility and mortality.

(b) *Population Growth and Human Development*: The topics to be considered, at the macro-level of the nation, would be the relationship between population growth and such variables as land and natural resources, agriculture, food, housing, employment, economic development, educational development and the development of health services.

The topics to be considered at the micro-level of the family would be the impact of family size on the quality of life in the family and aspects of development of the individual members.

(c) *The Problem of Urbanization*: This will include the problems associated with housing transportation, supply of water and other utilities, air and water pollution, urban unemployment, inter-group tensions, etc.

(d) *Family life Education*: This includes: the family as a basic social unit; functions of the family; family roles; factors strengthening or weakening family life; psychological aspects of human sexuality; the reproductive process.

(e) *Population Planning*: Strategies of planning and their implementation at regional and national levels, through individual, social and Governmental action are the topics to be discussed under population planning.

Prof. Jayasuriya admits that if the above course is taken in its entirety, it will be very heavy for ordinary students but it can be taken by those who would like to become high level population educators. Therefore, he suggests a particular 'mix' for appropriate age level keeping in view such issues as the objectives of population education laid down for each group of learners, the level of their maturity, their socio-cultural background, the attitude of society to certain kinds of learning, the availability of instructional materials and the personnel to teach population education.

However, on a detailed comparison of the course outlined above with that given earlier by the Asian Regional Workshop, 1970 we can conclude that there are no fundamental differences between the two. The courses modelled above are on similar lines. Stephen Viederman writes: "... population education deals with society at both the macro-and micro levels. As such, it serves a dual purpose. First, it serves to develop an informed citizenry capable of understanding population characteristics and processes as they effect society, and capable of making responsible decisions with regard to public policy as it might affect, and be affected by, these processes. Second, population education aims at developing informed individuals who will, as a result of the knowledge and understanding achieved through their education, make responsible decisions concerning their own reproductive behaviour. The key concept is responsible decision making which involves pre-knowledge and understanding of the consequences of one's actions." (45)

Viederman states that a broad conception of the field of population education was shown to him by a Colombian priest who defined the part of population education as Love, the Family, Population and Development. (45)

These four terms may be taken as entirely covering the main area of population education if we compare them with the components of education we have mentioned in the foregoing pages. To be more explicit 'love' and the 'family' are encompassed by the traditional fields known as sex education and family life education. The term 'population' may include the demographic aspects of population as well as its determinants and the term 'development' may cover the consequences of population growth.

Smt. Avabai Wadia has suggested the following elements which may be included in population education content: (73)

(a) Demographic trends, their determinants and consequences.
(b) Social and Economic development: trends and facts and figures.
(c) Ecological factors and human population growth.
(d) Social, community and family organizations.
(e) Reprodution in plants, animals and humans.
(f) Family life and inter-personal relationships.
(g) Family size norms as related to the above.
(h) Basic values and the quality of life for human progress.

The basic fact that emerges from our above discussion of possible content of population education as given by different experts and educationists is that the primary focus of population education is on population dynamics, social and economic consequences of population characteristics, quality of environment, human reproduction, health in relation to child bearing, and national population policy and programme. However, population education is not only a means of diffusing information about population problem of a country to the younger generation but it should be looked upon as a means for bringing about the desired changes in attitudes, behaviour patterns and individual and social values in the younger generation to make them regular acceptors of family planning programme, when the occasion arises, for a happier and healthier life for all.

V

SOME PROBLEMS IN INTRODUCING POPULATION EDUCATION

In the opinion of Stephen Viederman population education views population not as a problem to be controlled, but rather as a phenomenon—both social and biological—to be understood. The general aim of education may be said to develop in pupils the powers of critical thinking and to lead them to action in a rational manner. This new field of education—population education—cannot be away from this desired aim.

On the other hand, population education differs much from what we teach in schools, in the sense that "it may be more relevant to the students' own life, both now and in the future." (45)

If, population education is thus a subject of utmost importance then there should be no delay in introducing it in the educational system of any country, especially in developing countries like India.

The Role of Schools

Traditionally, home (family) and the school are the oldest and most powerful of our social institutions. In a fast changing society many changes are taking place everyday. They cannot leave the family unaffected in its original role of child educator. Emergence of woman as an earning member has relieved her of her traditional functions of being the first educator of the child and consequently more responsibilities have automatically been thrown on the other social institution i.e., the school. Historically, the family and the school have served each other. Schools depend upon the family for their raw materials and the family monopolises the supply function. To quote Kamala G. Rao and D. Gopal Rao "Traditionally schools have been known to be (a) future oriented, (b) having special experience in imparting knowledge inculcating attitudes, and developing skills in the young and immature minds, and (c) preparing children for their future occupational and life roles, far beyond their chronological age and experience." (50)

If this is the role of the school, it is proper that even in matters of imparting population education to children, the school seems to be the best agency available to the society for that purpose. In the Indian context the schools are expected to bridge the gap between the generations. It is because of this generation gap that information and knowledge do not flow freely between the parents and children specially on delicate issues like sex, family planning and family life education because of certain traditional inhibitions. At the same time children should not be deprived of this new knowledge which is intimately connected with their lives. Thus the school emerges as the most potent institution to remove these hurdles and discharge its duty towards social good. The teaching of population education, therefore, may be safely confined to schools which are in the present context the only link between the family and the community. However, it may be remembered that the field of population education is all comprehensive. It covers not only the children who are benefited by school education but all the younger generation including out-of-school youth to which the agency of school cannot cater. A separate programme is, therefore, essential for such groups of youth who are either drop-outs from the school system or did not have any advantage of schooling. Meanwhile, let us concentrate our attention on school going children and see how the knowledge of population education can be made available to them and make them understand the population problem with unbiased minds.

Population education being comparatively a new field of study there are no tested models anywhere in the world which can be followed by all the countries. As such each country has to evolve its own scheme taking into consideration its needs, aspirations of the people, educational system, socio-cultural background and its own resources. Advantage may certainly be taken of the experience gained by other countries in the field but it should be used rather as guidelines than pure imitation. Thus the problems of introducing population education in the school curriculum are of a varied nature and should be tackled in an official and effective manner. Let us not enumerate them but take them one by one as they arise during the discussion in the subsequent sections of this chapter.

VI

PARENTS' REACTIONS TO POPULATION EDUCATION

It is well known that education begins at home. In this sense parents' attitudes and their reactions to any educational innovation are of utmost importance. It is in the hands of parents to enhance or to mar the influences the school intends to exercise on pupils. Therefore, the feelings of parents on any educational issue should be properly judged and, if necessary, suitably channelized. Population education seeks to achieve some sort of change in our behaviour and value patterns. In this process parents should offer a helping hand to enable the school to reach the cherished goals of population education. To quote Dr. Edlefsen "Today's parents have a measure of responsibility in helping to achieve these behavioural and value changes and should receive guidance and encouragement from responsible Government officials, preferably through adult and community education programmes." (6)

Within the field of education it is possible to distinguish certain topics which are of non-controversial nature and which the parents will readily accept if they are presented to children. On the other hand, parents may have reservations about certain topics which should not be thrust on the school system. The Asian Regional Workshop, as we have seen, was quite clear about the non-inclusion of controversial topics in the school programme. Therefore, the best policy would be to act according to parents' wishes and accept the position that children would derive some benefit even if they are exposed only to the remaining part of the programme. In the Indian context sex education and family life education are some of the controversial topics. We have already dealt with these two aspects of the problem and emphasized the need of inclusion in school programme only those features of sex education and family life education which are not of a controversial nature. What is controversial or non-controversial depends upon the social and economic level of the masses. Therefore, the views of the parents on such delicate issues are to be judged first, otherwise there is inherent danger in trying to include material that may not be favoured by parents.

The attitude towards sex education on the part of parents is one of such vulnerable points. That is why Pohlman and Rao vehemently advocate 'sexless' population education. In supporting their view they add that: The notion that one cannot teach population education without teaching sex is ridiculous. An understanding of sex gives a more complete picture, but is not essential. People can even learn to practise contraception effectively with only limited knowledge of sex, though such k nowledge is ideal. (41)

Stephen Viederman gives the example of his latin American friends who suggested to him that population education could not be introduced in Latin American schools because they argued that the word 'population' conjures up images of population and birth control, which for various political, social, cultural and religious reasons, is not a very popular image at this point in history. (45) A mere change in terminology appears to be a practicable solution in this country and that should be immediately done. Secondly, only those topics of population education which will not raise any objections should be included in the school curriculum.

Dr. B.P. Lulla is of the opinion that the reservations on the part of parents about population education are expressed in the following way: (43)

(i) It is the other name for family planning propaganda of the Government.
(ii) It is concerned with sex education and hence it will spoil the younger generation in their moral character.
(iii) It is not suited to the younger generation as it concerns demographic facts and population dynamics which are difficult subjects for school children.
(iv) It is an imported idea implemented in India at the instance of some foreign agencies.

Parents who have such reservations about population must themselves be given a clear-cut idea about the subject by producing suitable literature on the subject which may help to dispel their doubts and fears about the nature of population education. Parents must get convinced that population education as well as the small family norm are not a part of Government's propaganda of family planning programme. But this acceptance on the part of parents must come at the mature level of understanding of the population issues.

Prof. Jayasuriya gives us a sound warning when he stresses that: The moral for curriculum planners is to develop a sensitivity to parental opinion and public opinion, and to go ahead with such parts of the programme as are acceptable to parents and which would achieve the objective of the programme even partially though not wholly. The moral from this is to desist from giving population education a propagandist flavour and to present the facts as objectively as possible at the learner's level of understanding, leaving it to the facts themselves to throw up in course of time the essential lesson to be learned from them. (35)

The objectivity in teaching and consideration of parental wishes are important factors which no programme of population education can ignore.

VII

CHOICE OF LEVEL

It is a basic principle of education that educational matter presented to the child should be at his level of understanding. The curriculum planners should always have in their minds this important fact when framing curriculum. Population education cannot be an exception to this. Having fixed the content of population education, the next step is to find out in what way and at what level of the educational ladder the content of this new field can be introduced or rather what learning situations are to be developed so that the objectives of population education can be achieved. At the Asian Regional Workshop: "It was the unanimous consensus that elements of population should eventually be incorporated into all levels of the school system. However, it was also recognised that limitations of human and financial resources demanded that initial programmes be somewhat narrower." The Report further added that, nevertheless, the consensus was that in terms of the needs of the region the priority level was the upper primary or elementary. (62)

Arguments for the Primary Level (Classes I to IV)

(i) More students can be influenced by a primary level programme. At the primary stage that is upto class IV or V children are below 10 or 11 years of age. It is at this stage that a large number of students can be met with and it is at this age that important attitudes towards life and social values are formed. Most of the students who complete their primary education and go for secondary school are compelled to leave the village because of lack of education facilities. Thus, those who complete primary education and do not go for secondary school remain in the village and are the best educated within the village and are recognized as local leaders who may have great influence over the local community. If these would-be leaders are covered by population education programme during their school days, they might influence the community favourably on population matters.

(ii) It would be easier to add population content to a primary school syllabus. In most of the developing countries a single-teacher system prevails in primary schools. There is also a common curriculum for all students in the same class as there are no optional subjects. This renders the inclusion of population topics in each pupil's programme comparatively easy. In many countries there is no great concern with examinations at this stage and thus constraints on the use of experimental materials are relatively few.

(iii) Majority of our population live in villages. The large family norm is more prevalent among rural people than among town people. The need for the spread of small family norm among rural folk is very great and this can be achieved by inclusion of population education in the primary or elementary school curriculum, because most of the village children do not go beyond the primary school level. Therefore, in order to form a broad base of the study of population education in the school system, it is essential that population education should be introduced in primary classes.

If the intention is to reach the largest possible number of children, then population education should be introduced into the lower classes of primary school. In Asian region in 1967, the enrolment ratio for first, second and third levels of education was in the proportion of 75:22:2.6 (62) This indicates the importance of primary sector of education in being a focus of attention from the point of view of population education. In the opinion of Prof. Jayasuriya, while ease of reach is undoubtedly an advantage, the possible impact of a population education programme, especially at the primary level of education, should not be overestimated. (37) First of all the development of materials at a relatively simple level of sophistication is a difficult job. The subject matter itself will have to be brought at the low intellectual level of the children. Thus, the concepts of population education are likely to suffer from over-simplification in this process. Secondly, it is contended that when we are sure that a great majority of our children drop out from the educational field hardly finishing their primary schooling, the distance in time between their exposure to population education and their nearing the reproductive age is so long that there is no guarantee that they will vote for a small family.

Prof. Jayasuriya questions this in the following terms: "What evidence do we have that such early exposure, without any exposure at all during the intervening period, would affect decision making and reproductive behaviour fifteen to twenty years later?" (35) However, if our intention in including population education in the primary school syllabus is limited to making children aware of simple population data and facts about population growth and how these two aspects affect their lives and the society at different points, then of course by doing so the necessary awareness may be developed in them. Inculcation of small family norm and decision making many years later in accordance with it should not be the expected outcome of teaching population education at the primary stage. To quote Prof. Jayasuriya ". . . .modest objectives that prepare the ground for the attainment later of larger objectives may be achieved at the elementary or primary level." (35) In this sense the population knowledge to be imparted to the primary children should be limited to some important facts related to population which make them conversant with simple population data and with population growth as an issue which directly touches their lives and the society of which they are members. This amount of awareness in population matters is what is expected of children and is sufficient for their age level. On this issue Dr. Edlefsen remarks that students in the elementary classes, starting as early as 8 or 7 years of age, can be made to understand the pattern of population growth in their own countries, with particular attention being given to the birth and death rates and the rates of population increase.

Further he suggests that students should not be overwhelmed in any one year or in any one subject with these population awareness units. On the contrary, this new information should be introduced little by little so as to keep the students' appetite keen for more knowledge regarding population. (6) This is a sound warning which must be considered while framing the curriculum of population education for all the levels of the educational ladder. Another note of warning is struck by Dr. V.K.R.V. Rao when he remarks that the attempt to tell the children that two or three children are enough would be not only crude but may also create in the children feelings of disaffection for their parents and hatred for their brothers or sisters in case they constitute a large family. (45) These are the dangers against which precautions should be taken specially by the teachers imparting population education and by the curriculum planners. This caution is not necessary at the secondary level but is to be emphasized in respect of primary school children. Prof. Jayasuriya advances two reasons for this: Firstly, the child is more pliable emotionally and less able to see situations in a total perspective. Secondly, if the subject of family size is presented at all at this stage, it is likely to be presented in an over-simplified manner that could sow the seeds of disaffection. (35)

Reviewing all these opinions one arrives at an inevitable conclusion that at the primary stage very simple ideas regarding family size and happy family life may be given. We must concentrate on the ideas that 'a small family is a happy family' not as a part of propaganda of the Government family planning programme but for alerting them towards the cost of basic needs of a large family in comparison to those of a small family. (51) This opinion is shared by experts like Prof. T.S. Mehta and B.S. Parakh. However, Miss S. Panandikar slightly differs with this point of view when she says that these concepts of small size family should be introduced only at the middle school level. To quote her: "When we come to the middle stage of education: especially in the rural areas, where some of the children may be leaving off education at the age of 13, I think we can take up the question of population education, and what we have to do is, we have to make these youngsters realise, make these youngsters appreciate, how the quality of life for the individual, for the family, for society; and for the nation, depends on the size of the family, and depends on the size of the population so far as the nation is concerned." (7)

To sum up, the educationists all over the country and throughout the world are agreed upon the idea of introducing population education at all the levels of school. Primary level, being the base of the educational ladder with the maximum number of students and where they can be better influenced because of their tender minds, assumes a special significance.

At the primary level because of prevalence of single teacher system in the country and less restraints on the examination side the infusion of small topics of information about population education through different subjects like language and social studies can be accomplished with more ease. This, however, requires an imagination and understanding on the part of the primary teacher. But, unfortunately, it is a fact that the number of teachers at this stage is considerably large and their academic and professional baggage is very limited. Therefore, in order to kindle the imagination of these teachers and activate their participation in the population education programme it is necessary that some central agency should take up the responsibility of training them and supplying the instructional materials needed for the purpose. For instance, to make a beginning a few well-written lessons including simple concepts regarding population growth may be included in primary school textbooks. Similarly, while teaching science, mathematics and social studies no opportunity should be lost to touch on population concepts. But care should be taken to avoid artificiality in handling these concepts so that students are not bored, rather their appetite is stimulated for still further knowledge of population issues. Primary stage becomes, therefore, the foundation on which further programme of population education may take shape.

Arguments for Secondary Level

(i) Secondary school pupils are nearer to their reproductive decisions. The time difference between any educational programme and its desired response should be as short as possible for the effectiveness of the programme. The secondary pupils are older than the primary school pupils and are around 16-17 years of age when they leave the secondary school. They are therefore on the threshold of their reproductive field which they will enter within a couple of years. Therefore, the impact on their minds of any population education programme will have more freshness than in the case of primary school pupils.

(ii) Secondary pupils constitute the society's future leaders. (62) This is the opinion of the Asian Regional Seminar held at Bangkok. The students who have received secondary education mostly join the cities and towns and are likely to occupy a middle level leadership and as such they may influence the masses to a considerable extent. If these would-be leaders receive during their secondary education a comprehensive knowledge of population education, they are likely to transmit it to the people below them, with certain conviction and understanding.

(iii) Curricular materials are easy to prepare for the secondary level than for the primary level. This is because the secondary pupils are more advanced in age and have a broader experience. Being older and more mature they will be in a position to understand the fundamental relationship existing between the population growth and other variables. That is why the few school population education materials which have been developed in several countries are largely for the secondary level. The Final Report of the Asian Regional Workshop, in this connection, remarks: "to the extent that a secondary programme can use aggregate data, while a primary programme should use micro-level data, the former has the advantage of more readily available (although perhaps not very accurate) information." (62)

(iv) In view of the fact that the enrolments at the secondary level are lower than those at the primary level the number of teachers necessary to undertake the population education programme at the secondary stage is smaller. Similarly, the teacher at this stage is better equipped both professionally and academically. This makes the introduction of population education at this stage easier. Secondly, considering also the comprehension level and the physical growth of the pupils at the secondary level, it is easier at this stage to talk about population problems with more ease and in greater detail explaining to them the implications of population pressures at the micro-level as well as the macro-level. This is not possible at the primary stage where concentration on micro-level of the family or the village level sets out the boundaries for population education. Therefore if some controversial topics of population education are to be included in the programme, there will be less objection to them at the secondary level. Also difficult topics may be better learnt by the students at this stage because of their maturity.

(v) The secondary level programme can be evaluated more quickly and accurately. This is because of smaller number of pupils and better trained teachers. In the words of Asian Regional Workshop: "To continue to command the necessary resources, any programme needs to 'prove itself'." (62) The demonstration of success is important for the further expansion of any programme and as the population education programme for secondary school pupils can be better evaluated and more easily judged the scope for its continued expansion is guaranteed.

Therefore, there is no doubt about the appropriateness of population education for pupils at the secondary stage. If the pupils have been previously exposed to population education at the primary level then the new exposure at the secondary school stage will deepen the insights they have gained already. Secondly, certain topics which have been incidentally referred to at the primary level can be dealt with in more depth at the secondary level. Also the topics which would have been considered as controversial or objectionable at the earlier stage may be brought into the picture at this stage because of maturity and better comprehension of the secondary pupils. Diversity of subjects and their being handled by specialist teachers renders also the integration of population education material in them comparatively easy. To quote Prof. Jayasuriya, "It should, for example, be possible to discuss with secondary pupils in a comprehensive manner the factors that have led the people in many societies to adopt a large-family norm, examine the appropriateness of such a norm in the context of the world of today and attempt to inculcate in the pupils the idea of small-family norm." (35)

Dr. Edlefsen points out that by the time a student is ready to leave the secondary school he should have an appreciation of his or her role and responsibilities as consumers and as potential producers in a complex society. He further adds that besides instilling this knowledge and related values emphasis should be given on the economic and social consequences for a family made up of several children. With this awareness each student can be taught to apply a similar analysis to his community, his nation and to the world as a whole.

Uncontrolled population growth poses before us the question of human survival and the need of recognizing the ethics of living in harmony not only with one another but also with the national environment, for in this finite world of ours natural resources too are limited. Robert Veatch warns us in the following words: "The survival of the human species and the obligation of man to live in harmony with the rest of the world are very potent moral claims. . . . that unless population growth is curbed (by changes in individual desire, by the impact of Malthus's war, pestilence, and starvation, or by new population policies) actual physical survival will be at stake. Long beyond that, the quality of human life will be jeopardized." (68)

The students at the secondary and higher secondary stage should not only develop critical thinking on population issues but should be encouraged to synthesize what they have learned and to apply the knowledge to the real world. These are certainly higher levels of achievements in the domain of knowledge (Cognitive Domain) according to Benjamin Bloom than mere recall and understanding and therefore the teaching of population education should be directed to achieve them. This is what may be aimed at during the secondary and higher secondary school stages.

Dr. B.P. Lulla has advanced an operational programme of population education for schools. (43) He has suggested that the school, the teachers and the pupils are the main components of the programme. For a successful implementation of the population education programme some reorientation of the correlates of the main constituents of the programme is essential. As such he has advocated:

(i) *Creation of school climate*: If the school of today has to play a new role of a change-agent then it has to assume the responsibilities of preparing the pupils for the new challenges ahead. This is a task which can be accomplished by means of a co-operative effort between the Education Department and the school managements. Therefore in a programme of population education involvement of both these parties is essential.

(ii) *Reorientation of Teachers*: The teacher of today has a dual task before him: one is to furnish subject knowledge and information and the other is to foster social change. Unless the teacher is convinced or properly motivated to accept a new situation, the chances of introducing any innovation in the curriculum cannot be met with success. Therefore, the teacher should be properly reoriented to accept the change by arranging suitable courses for him.

(iii) *Motivation of Pupils*: The pupils who are of foremost importance in a programme of population education should be motivated to learn about the population problems. The responsibility of parents in this respect is of greatest importance. Unless the parents are properly oriented towards the concept of population education they will not be able to influence the children. The school will continue and reinforce the influence which the parents exert on the children at home.

These are therefore the main constituents according to Dr. B.P. Lulla which should be taken care of in any programme of population education in schools.

The National Seminar on Population Education held at Bombay in 1969 recommended that "since the growth of population is a major challenge that the country is facing, the members of the Seminar are agreed that population education should be an integral part of education at all levels." (45)

Arguments for the inclusion of population education at the primary and secondary school levels have been forwarded above. The case for introducing population education at the college levels too deserves greater attention on the grounds that the students at this stage are fully developed, both physically and mentally and are already on the threshold or hardly a few years away from the time when they would make decisions regarding marriage and reproduction. These people whose reproductive behaviour will have an immediate impact on population growth constitute the priority target of any population education programme. It is at this stage, if conditions permit, that some idea about family planning methods may safely be introduced in the content of population education.

Recognizing the importance of this target group the National Seminar on Population Education, 1969 recommended the following steps: (45)

(a) At the college level, steps should be taken by the universities to design a course in demography at the undergraduate stage so that those who are interested in population problems could specialize at the post-graduate level in demography.

(b) College Level Guidance Bureau should be strengthened by qualified staff who would help the students to solve personal problems in connection with family relation, marriage counselling.

(c) Extension lectures should be organised on population problems in each college and university every year in order to ensure a widespread awareness of the problems among the youth and teachers.

VIII

CURRICULUM OF POPULATION EDUCATION

In a dynamic society the curriculum of educational institutions is subject to modifications from time to time. This is because of new ideas which may dominate the educational scene or because of knowledge explosion which take place frequently. These changes which affect mankind and which have a relevance to the lives of children must be made available to the younger generations for enabling them to face the future with sufficient ease.

The uncontrolled growth of numbers is one of the powerful challenges of the second half of the present century and children and youth of today should understand its implications and be able to act wisely and rationally by deciding about their reproductive behaviour when the time for such decisions arises. Educationists all over the world are agreed on the issue of including population education in the curriculum of educational institutions at all levels. There may be a divergence of opinion about the possible content of a population education programme as it may take different shapes depending upon the social and economic growth of the country and its cultural and traditional background but there is an area of agreement about the core concepts in the content of population education programme all over.

Prof. Jayasuriya thinks that the curriculum development is beset with the following difficulties: (36) (a) the relative newness of the concept of population education; (b) the traditional conservatism of the educational profession; (c) the necessity to draw the content of population education from a number of disciplines; and (d) the lack of a corps of persons specially trained in the field of population education. Let us examine these difficulties one by one.

(a) Population education is relatively a new area of study which has not yet reached a stage of complete clarification of related concepts. This drawback is not a special feature of population education alone. Any educational innovation has to overcome these obstacles and population education cannot be an exception. Therefore, after generalizing the difficulties which a new idea in the field of education has to face we may apply these conclusions to population education and find solutions accordingly in the light of experiences gathered previously.

(b) The traditional conservatism of teachers and educational administrators to sensitive issues like population education is a partial truth. On this point, we may say that not all the teachers and administrators are conservative by nature. Once these people are convinced of the said implications of the population growth, especially its socio-economic consequences as they affect their lives, they will favour the inclusion of population education in the curriculum. However, others i.e. administrators and teachers who do not adapt themselves to the changing times should be involved and oriented to the concept and need for population education for the younger generation in our country.

(c) Multi-disciplinary nature of population education is also a point in question. The content of population education is to be drawn from a number of disciplines such as economics, demography, sociology, biology, medical science, etc. A curriculum construction is a joint endeavour on the part of educational adminstrators, teachers, parents and specialists in educational fields. Thus, no special difficulty is noted in the case of population education. However, if an integrated course of population education is under purview, in that case specialists in different fields will have to work together to find out, in the existing syllabus, necessary 'plug points' to inject the content elements.

(d) There is a lack of persons specially trained in the field of population education. Population education being relatively a new field of education this difficulty is bound to be there. For the last fifteen years much progress has been made in this field in the Western countries, especially in the United States, in the field of providing instructional materials. In India, the impetus to action was given by the National Seminar on population Education in 1969 and it has gathered the necessary momentum as we shall see later on in this chapter. Thus the difficulty about the lack of trained personnel is a temporary difficulty which will disappear in course of time.

Curriculum development is a complex and a multi-dimensional process. The educators while developing curriculum must find satisfactory answers to the following four questions. (45)

(a) What educational purposes should the school seek to attain (in regard to population education)?

(b) What educational experiences can be provided that are likely to attain these objectives?

(c) How can these experiences be effectively organized?

(d) What should be the strategy of implementation of this change?

A detailed analysis of these four questions will be helpful for our purpose.

(a) The first question leads us to the formulation of objectives of population education. What the goals of population education should be has already been discussed in this chapter. In the Indian context too the objectives of population education as laid down by the National Seminar on Population Education in 1969 should serve as guidelines. The steps involved in the formulation of objectives are:

(i) The first task is to undertake a status study of the curriculum operative at present in order to know the present state of teaching with regard to population problems, education, nutrition, health and family life education in the existing school subjects. This will lead to a detailed analysis of the syllabii in Social Studies, Geography, Economics, General Science, Health Education, Biology, Languages. The status study has the double advantage: one is of enabling us to obtain background information about the existing curriculum and also an idea of general objectives of the school programme.

(ii) The next step would be the clarification of the concept of population education and identification of clear cut objectives of teaching the subject. For this purpose the information gathered earlier will be useful. Secondly, it is also essential to undertake a study of available literature on the subject in the country as well as outside. The study thus undertaken will result in the identification of some major objectives for population education. To quote Prof. Mehta "This would entail careful review of the broad canvas of our contemporary society. ". . . .This review should result in the identification of some major social values that may have relevance for the introduction of population education in the school curriculum. These values would then form the major objectives to be achieved through the new curriculum." (50)

(b) Having set the objectives for population education the next logical step is to search for suitable educational experiences that are likely to attain the selected objectives. This means determining the possible content of population education. In deciding over the content of population education, in a general way, it is quite appropriate to identify concepts, information and facts relevant to population problems, population dynamics and its effects on the life of the people in the country and the world in general. "The criteria for this selection would be provided by objectives laid down . . . . in terms of desired changes in attitudes, behaviour, values, etc." (50)

Dr. S. Wayland claims that the following aspects also should be given thought while fixing the possible content of population education: (70) (i) the nature of the learner; (ii) the distinctive features of the body of knowledge from which the content is to be drawn; (iii) the specific outcome which is desired from the innovation; (iv) the qualities possessed by the instructional staff; and (v) the constraints posed by the structural aspects of the school system and its programme.

(i) The child who comes to school is 'a priori' a member of his family from where he brings to the school a set of attitudes and values concerning such areas as age at marriage, size of his own future family, etc. If these initial attitudes are to be acted upon by the school with the help of new curriculum then the content elements to be included in the population education programme should have some relationship with the set of values the child brings with him to the school. Therefore, some research in this area is highly needed to prepare the ground for the new curriculum.

(ii) Not all the subjects in the existing curriculum are equally important or equally useful from the point of view of population education. In the school curriculum, content areas in some subjects are more highly developed than in others. Population education represents a synthesis of knowledge from several fields. It should include the content now taught in Biology, History, Civics, Economics, Sociology and Environmental Studies.

(iii) If the desired objectives of population education are to be attained fully the content should be laid down taking into consideration the relevant factors.

(iv) Another factor worth considering in the selection of appropriate content for the school system is the quality of instructional staff. In any innovation in the educational field the teacher occupies a pivotal position. It is through the teacher that the school curriculum unfolds itself. The teacher must have the necessary understanding of the subject and must be able to handle it effectively. This implies also his professional competence. "The instructional problem is further complicated by the potential difficulties faced by teachers whose own values concerning population and reproduction may influence their interest in and their capacity to function professionally in this area." (70) This can be done by careful pre-service training of teachers, reorientation to the existing teachers and by developing instructional materials for the use of teachers and students in the form of textbooks, handbooks, supplementary reading materials, audio-visual aids, etc. On the availability of good material depends the success of the programme. The preparation of instructional materials is not an easy task. It means the translation of difficult concepts and bringing them down to the level of maturity of students at different stages. It should be a joint effort of varying competencies in different fields. The panels for the preparation of this material should include teachers, social scientists, demographers, medical men, method specialists, artists, audio-visual experts, etc.

(v) Just as the status study is undertaken to know what is being taught with regard to population problem in various subjects in schools, a survey of the structure of the existing education system is also a necessity while developing the content of population education. Introduction of population education may require some change in the structure of the school system later on and hence the present position of the educational system in respect of some factors must be studied, such as the retention rate of students at different levels, preparedness of the teaching profession to handle the new subject of population, the nature of external examination system, the degree of local or central control of the curriculum, etc. These features must be given a careful thought as the new programme of population education will certainly have an impact on the existing system.

At this stage, it will be pertinent to ask the question, what are the educational changes involved in introducing population education? Population education, though a new area of study, cannot be claimed as something totally new which is being added to the education system. However, as the new programme is to be established on a sound and continuing basis some modifications in the system are essential though they may not be of a radical nature. The changes involved will depend upon the nature of the existing system and that is why a thorough examination of the existing system was suggested. The changes expected are not the same everywhere but will vary from country to country. J. Edlefsen on this point remarks: "Another difficulty is that extensive innovations in education require supporting changes at a number of different parts of the total education system. Among the essential changes needed are these: revised syllabi, revised text books, subject matter supplements, modified content of some external examinations, specialized pre-service education of new teachers and improved in-service education for experienced teachers and supervisors." (6)

On the basis of the overall objectives laid down by the National Seminar on Population Education 1969, the National Council of Educational Research and Training, New Delhi has outlined a draft syllabus for population education covering the following six major areas: (45)

(1) The population growth (determinants and demographic situation).
(2) Economic development and population growth (consequences).
(3) Social development and population growth (consequences).
(4) Health, Nutrition and Population.
(5) Biological factors—family life and population.
(6) Population programmes—National and International.

(c) The next question before us is that, having fixed the content of population education, in what way these educational experiences will be effectively organized?

There are a number of different ways of adding population material to the existing school curricula. The Asian Regional Workshop on Population and Family Education has suggested four different types of strategies each having its own advantages as well as disadvantages. They are: (62)

(i) *Single course on population education*: It consists in developing a term/semester or a year course based only on population. The basic advantage of such a course is that it enables one to study the subject in proper depth and also requires a fewer number of teachers to be trained. On the other hand if such a course is developed then it will be another addition to the already over-burdened school curriculum. Considering the multi-disciplinary nature of population study it is also difficult to find and train teachers in sufficient depth to teach such a course adequately.

The supporters of a special course on population education argue that if the imparting of population education is so crucial to the welfare of people then the subject be given the status of a compulsory separate subject and the school curriculum should be modified to accommodate it. Mere pretext of heaviness of curriculum should not stand in its way.

However, it is not the overburdening of the school curriculum that deters us from adopting the single course on population education; it is the practical difficulties of the situation on primary as well as on the lower secondary levels that compels us to think of alternatives. If the course, however simplified, is introduced at the primary level there would be many concepts which could not be adequately covered because of very low intellectual level of children at this stage. The same will be the case at lower secondary when the fundamental concepts of population education will not be quite clear to the understanding of the school children.

Hence on both the stages the introduction of a single course will defeat the very purpose of population education. Prof. Jayasuriya is of the opinion that "in the case of children at the elementary or primary level it is perhaps out of the question trying to introduce population as a distinct subject. The approach should be to introduce population related materials through such subjects as literature, history, geography, social studies, mathematics, general science and health education. This should be the approach with secondary pupils, too, in the first few years of their course at least, but a wider range of subjects than at the elementary or primary level, namely such additional subjects as biology and economics would be available and make treatment in depth possible." (35) This implies a concentric development of population education curriculum with an initial broad base consisting of simple concepts of population problem continuing progressively through sharper contents.

(ii) *Unit in a subject area*: Under this type of course a number of units in different school subjects and different grade levels would be chalked out. "A series of related concepts may be woven into an instructional scheme which takes roughly from one to four weeks of class-room time." (62) This system implies a slight alteration in the school curriculum which is a difficult task. Similarly training teachers in many subjects and grades is not an easy job.

(iii) *Permeation*: This is generally known as infusion method. The National Seminar on Population Education held at Bombay in 1969 recommended that: Population Education should be introduced into the curriculum of schools and colleges by including it in so far as it may be possible, in the areas of study now common in the educational curriculum such as Social Studies, Health Education, Mathematics, Languages, etc. In fact, the Seminar was of the view that it might be possible to achieve all the objectives in view by including population education suitably in the curricula of appropriate subjects already comprised in the curriculum. (50)

Under this strategy population problem permeates many curricular areas. This assumes that syllabii of study in these areas have a certain flexibility. If there is no such flexibility and the original curriculum is somewhat rigid then the teacher's task is rendered difficult and a great ingenuity and imagination on his part is essential.

The fusion of population education concept through the entire school programme is supported on the following grounds:

(a) The curriculum is already overcrowded. This made Smt. Avabai Wadia remark "Over-crowded syllabii are becoming the bane of modern education, partly due to clinging to old and out-moded bits of knowledge and ways of teaching and, to a considerable extent, due to the 'explosion of knowledge' which is taking place when new discoveries are emerging at breath-taking speed." (45) The claim of population education in the educational syllabus as a separate subject cannot be rejected on the flimsy grounds that it cannot have a place in the overcrowded syllabus. As we have said in the preceding pages if population education is of such crucial importance to the well-being of mankind, then it must find a place in the school syllabus but as we have noted already because of its multidisciplinary nature and because of the difficulty in its introduction as a special subject at the lowest level of the school ladder, population education should be taught necessarily to small children, incorporated with other academic subjects.

(b) Population education materials should be placed before the children throughout their entire period of schooling in order to provoke better understanding on their part. This desideratum can be achieved if population education is taught right from the primary or elementary classes. As we have seen, in lower classes special subject system cannot work effectively. There is therefore the need of integration of population material with other content.

If this approach is accepted it is necessary, first of all to conduct a status study of the existing curriculum to find out in it the relevant curricular areas—'plug points' for injecting population education materials. The subject where the 'plug points' can be found with considerable ease are: Social Studies, Economics, Geography, Biology, Languages. Viederman in this respect observes: "When we consider the possibility of infusing population related concepts throughout the school curriculum, we soon realize that virtually no area of human knowledge covered by the curriculum is excluded." (69) He thinks that even in art courses an aesthetic of space could be related to a discussion of population. But it should be ensured that though the curriculum offers certain degree of flexibility, this feature of the curriculum should be made use of with necessary constraints. Hence it is essential to see "that the introduction of population related materials takes the form of a natural integration with other content rather than a straining of such content to accommodate the materials in an artificial or unnatural manner." (35)

(iv) *Mixed Approach*: It should be noted that in spite of many inherent advantages that this technique offers, it is "difficult, time-consuming and expensive to alter so many curricula." (62) This is because, the status study of the curriculum, finding the 'plug points' through which population materials can be introduced and the depth at which they may be introduced at each possible level are greatly laborious tasks and time-consuming for the curriculum planners. Prof. Mehta feels that the short term course should be for all students and may be developed and added to the existing curricula. (49) Prof. Jayasuriya on the other hand, thinks that a short unified course of one hour's duration a week for about ten weeks for pupils in the last year or the penultimate year of secondary school should be there to consolidate and integrate the knowledge and insights the pupils have gained into the problem of population growth through their exposure to population related materials in the subjects they have studied during the previous five or six years. (35)

The Asian Regional Workshop, 1970 was also of the opinion that as a supplementary action to the infusion method it would be very valuable if the variety of population facts could occasionally be summarized by a unit specifically designed for the purpose. (62)

Similar doubts have been raised by Smt. Avabai B. Wadia. She remarks that while the syllabi is being prepared for school teaching the educators should note the important point that ". . . . there is some danger that when population information in neatly fitted into the syllabus, it may ultimately become just another piece of knowledge to be acquired as a part of 'learning' without any noticeable effect on 'awareness' leading to change of attitudes." (51) In population education we want to bring about certain changes in attitudes and behaviour of children as regards the family size and the wellbeing of the nation and it is not just a subject in which knowledge is imparted to students whether given as a separate unit of 'infused'. The curriculum development cannot be achieved overnight. It is a long-term process. The population problem has assumed such alarming proportions in this country that the introduction of population education for all levels of education and even for out-of-school youth is an urgent need of the moment. Referring to the school system Smt. Avabai B. Wadia emphasizes the possibility of the extra-curricular approach. She stresses the need of utilizing the 'free' periods in the syllabii, which teachers with imagination and originality can make good use of.

However, it is our opinion that such teachers have become a rarity but having in view the importance of the population education programme necessary reorientation to teachers may be given in their pre-service as well as in-service education. Therefore, it is suggested by Smt. Wadia that, "such extra-curricular activities can include the talk-and-discussion method, rule playing and games, the preparation of all sorts of visuals and exhibits, observation visits to slums or villages or natural reserves and so on." (51) It is a point to be noted that extra-curricular activities can be safely introduced in high schools, and colleges as an application of what is being taught in the classes by way of theoretical concepts. But on the primary level an integrated approach should be followed so that population concepts find their way in all the school subjects which are mostly taught by a single teacher, in order to prepare the grounds for higher concepts later on.

Whatever may be the demerits of infusion method, it is felt that it is the best method to deal with children of primary classes and lower secondary classes when the children are immature. This may be supplemented by a special course in the higher secondary classes. How this integration is to be achieved is a special area in which educationists and various competencies will have to make joint efforts.

Having seen that the concepts of population are to be inculcated in the minds of children by whatever methods available at present in the field, the question arises as Dr. Wayland puts it, "Are the expected outcomes commensurate with the investment of time, personnel, and resources that will be required ?" (70)

A conclusive answer to this question cannot be given as much research is needed on this important factor and, population education being rather a new field of study, no research has been done so far on this important aspect. Adequate asssessment will also be difficult to make, given the time interval between the school years and the time when the consequences of education can be meaningfully determined, as a variety of events take place in the intervening periods. The judgement is difficult to pronounce but it should be borne in mind that this is a general difficulty with all the educational programmes and therefore experience had in the past about them can be brought to bear in making an assessment concerning population education. Commenting on this aspect Viederman remarks: ". . . . Population education programmes have broader goals than simply changes in fertility behaviour. Furthermore, the more general understanding of population characteristics and processes may, in the long run, lead to a change in societal norms that might ultimately account for smaller families." (69)

Prof. Jayasuriya too, is quite emphatic on this issue. To quote him ". . . .it is reasonable to expect that the probability of a rational decision from a person who has such educational experiences is much higher than from a person who has not had an orientation to population issues." (35)

Population education is an educational investment which is likely to pay rich dividends in the long run as education in general does.

(d) The last question which arises in the development of curriculum of population education is to find out the strategy of implementation of this change. The general structure of the individual education system is a factor in the determination of the strategies which may be used. In a highly centralized national system of education the strategies involved may be different from those to be adopted in a system where the education is locally controlled. In the Indian context it is desirable that the strategy is in-built in the programme itself. Unless the states are persuaded to utilize the materials developed at the central level, the population education programme cannot be made a success. Therefore, involvement of the states from the initial phasing of the programme in respect of curriculum is quite essential. The matter produced at the central level with the co-operation of the states may then be modified and adjusted by them to suit the local conditions before final use.

The Asian Regional Workshop, 1970 recognized the need of the strategy for convincing the appropriate people—decision makers—of the importance and urgency of introducing population education in school programmes of Asia. (62) This includes the contact with the decision-makers through seminars and visits by expert teams initiated by UNESCO; supplying them with the necessary literature on population problem and population education and participation of decision-makers in international and regional seminars.

Building public and professional support is another aspect of the problem of strategies. Educational leaders and teachers must be convinced that the proposed changes in the school curriculum are desirable and practicable. The public in general will not accept any change if educational leaders have some reservations about it. Similarly, influential public leaders may break to some extent the reluctance of educators to introduce change. The professional support is required not only to introduce the change but also for developing necessary aspects of the change, by organising workshops, seminars, etc.

Training of professional leadership is also another important step. We have seen that population education is a new area of education and as such the availability of expert personnel to give the required leadership is meagre. Therefore, the development of a tradition of specialization in this field with a sufficient number of competent persons deserves the highest priority. Prof. Jayasuriya gives some guidelines for the training of population educators. In this respect, first of all it is necessary to select persons who have certain academic and professional qualifications and an interest in undergoing training in population education. Secondly, it is necessary to appoint some persons to impart education to these selected trainees. The former may be drawn from the teacher educators and teachers from schools and colleges as they will have academic or professional qualification in one or more areas having a bearing on population education. In the second category it will be difficult to find completely self-sufficient individuals to provide the training. Therefore, reliance will have to be placed on team effort. Hence, it is the joint efforts of this nuclear group of experts in diverse fields that will bring into being the first cohort of population educators which in its turn by self-development and experience in the field will be in a position to train more population educators as well as to provide instruction in population education to groups. (36) The special training referred to should not be thought of only in terms of a formal degree. Concentrated work for three to six months should be enough time for an experienced educator to develop a required competence to provide leadership in this new field. Practical experience may be gained by them when actually assuming a working position in appropriate setting.

For proper implementation of population education programme it is necessary to seek collaboration of other public and private organizations which have their programmes related to the field of population education. In countries like India, where there are official family planning programmes, the expertise and the insights of the staff associated with this programme will be a valuable asset. The Family Planning Association of India has done valuable work in the field of family planning and in recent years in the area of population education. Their expert staff resources must be fully made use of on national scale for the implementation of the population education programme, on a national level. Similarly, some national and international institutes which have been established in the country for the scientific study of the population problem, may be a useful source of materials and consultants.

Dr. Sloan Wayland suggests three kinds of general strategies for the introduction of population education in schools. They are: (70)

(i) *Incremental Pattern*: Under this pattern a programme is first introduced in a few selected schools. After a try-out it is then extended to more and more places. This pattern partakes the nature of pilot project in which any innovation before being introduced on a national basis is first subjected to perfection in the project.

(ii) *A System-wide Approach*: This consists in the introduction of population education throughout the education system after the necessary preliminary work is over.

(iii) *The Sequential Approach*: In this, the focus of attention is initially on one level of education system and in course of time the programme is introduced in sequence up or down the educational ladder. Thus, the programme may be either introduced at the college level or the starting point may be the primary level.

In practice, some combination of the three stategies is likely to occur. The choice of strategies depends mostly on the availability of resources, existence of personnel trained for the purpose, structure of education system, national policy on education adopted by the country, etc.

IX

THE ROLE OF TEACHERS

The Asian Regional Workshop held at Bangkok emphasized the high priority that needs to be given to the adequate pre-service and in-service training of teachers for a successful implementation of population education programme. The Workshop remarked that: quality implementation of a population education programme in the schools of Asia necessarily required effective communication channels between the curriculum designer and the instructional system. . . . The teacher-pupil channels could not function effectively without high efficiency of the teacher educator-teacher channels. (62)

This brings to the forefront the need for reorientation of the curriculum of the teacher training colleges as well as the necessity of organizing special courses for teachers who did not have any training in population education during their pre-service education.

In modern times, the teacher has to perform a dual task: one is to provide knowledge and information and the other is to act as an instrument of social change. In the past the teachers' colleges have done the former task quite satisfactorily. But now they have to undertake also the second. In imparting population education the teacher has necessarily to assume this double role. Therefore, if the teacher has to inculcate in his students a new set of values and attitudes, the teacher himself must be convinced of the usefulness of the new outlook, and must first develop in himself these attitudes if he hopes to transmit them to his pupils. Dr. Wayland in this respect opines that: in population education the role of the teacher is highly important because we may not forget the teacher also has an affective domain. . . . It is, therefore, necessary that all our activities should be based upon a due recognition of the teachers' role, his conviction, his will and his abilities to bring about a significant change in the attitudes and understanding of young children. (51)

Ignorance, indifference, resistance on the part of teachers are the three situations which stand in the way of an effective programme of population education in our country. Unless these are eliminated from the field, all our efforts to impart population education will be nullified to a considerable extent. Majority of our teaching profession lives in the villages away from the urban areas and where new ideas do not find easy access. The teachers with these surroundings have no means to gain any information and improve their knowledge. The ignorance of teachers acts not only against their self-development but is an impediment to the nation's progress. Before population education is introduced in the school system the teachers must be re-oriented to this new idea by means of in-service courses and liberal provision of teaching materials like text books, visual aids, etc.

If teachers could be somehow ego-involved in population programmes so that they get some status or financial benefits from them, their whole attitude would be affected and would then spread to the pupils. By doing this, their indifference and resistance will be minimized. The involvement of teachers in every aspect of population education programme is of crucial importance. This should be done at every stage of the programme. Thus, the teacher will get not only a status but his experience in the field will serve as guidelines for any future modifications of the programme. Dr. S. Krishnaswamy Rao mentions that "In recent years, the behavioural scientists have innovated new motivational techniques for training the executives, the teachers, the resistors, and the like. These techinques have such potentialities as not only to motivate and change the individuals to accept and boost up the programme, but also to sustain their motivations for a considerable period of time." (8) Therefore, there is no denying the fact that the success of population education will ultimately depend upon the participation of teachers in the educational process.

The National Conference on Population Education held at New Delhi in 1971 recognized the need of a thorough preparation of teachers at various levels by incorporating population education in the training colleges preparing teachers for elementary and secondary schools. It also suggested an intensive programme for in-service training of teachers. It also urged the State Institutes of Education to organize short-term refresher and in-service programmes of a duration of one to two weeks for primary and secondary teacher training levels. (51)

Population education should form an integral part of pre-service training as well as in-service training of teachers at primary and secondary levels. The need arises therefore of suitable modification of curriculum of the teachers' training colleges because population education has to be included therein.

Dr. B.P. Lulla suggests the following measures for the reorientation of teachers: (43)

(1) All teachers should undergo an orientation programme in population education theory either as a part of regular training or as extension lectures before they qualify for the degree of B.Ed.
(2) They should practise a few lessons in each method demonstrating correlation of some topics to the problems caused by population or giving demographic facts and figures.
(3) They should undertake field-work and research studies on the effect of population growth on health, welfare, education and progress of individual and community.

(4) The teachers' colleges should give some weightage to the training course in population education in their evaluation system. Even a separate certificate for attending the course in population education will be an attraction for teachers.

(5) There should be some lessons in the text-books with some bearing on population and its impact on human health and welfare.

(6) Every school should have charts, graphs, pictures and such other teaching aids which can inform the pupils of the population dynamics in the country and the world.

(7) Every school should develop a film library and audio-visual material for population education with the help of private and public agencies interested in population control.

(8) Every school should have a special corner for reference materials on population in its library.

X

TOWARDS A NATIONAL PROGRAMME OF POPULATION EDUCATION

Population Education Programme at the Government and national level has started only from the year 1969 as a result of the National Seminar on Population Education held at Bombay in the same year. Prior to that sporadic efforts were made by a few voluntary organizations. For instance, the Family Planning Association of India had discussed this subject at its Sixth All India Conference in Chandigarh in 1968 and thereafter at a Seminar for Principals and Teachers in Bombay in March, 1969. (73)

It was at the National Seminar in 1969 that the objectives of population education programme for the country were laid down and the establishment of Population Education Cell at the N.C.E.R.T., New Delhi was recommended. It is natural, therefore, that the N.C.E.R.T. which is the apex institution at the national level should be entrusted with the task of introducing population education in the country with the active co-operation of the departments of education of various States. The National Seminar was followed in 1971 by National Conference on Population Education, in New Delhi.

The States in India where population education has been introduced with the assistance of N.C.E.R.T. are Haryana, Himachal Pradesh and Maharashtra. Haryana has launched a programme of population education in its schools by integrating population materials in Geography and Civics. In Himachal Pradesh a start has been made to introduce population education concepts at the primary school stage. Maharashtra State Board of Secondary Education has incorporated population education concepts in their syllabi of Geography, Civics, Economics, etc. (51)

The Department of Social Sciences and Humanities of the N.C.E.R.T. has come out with a draft syllabus in social studies which has been adopted by some of the States. The Population Education Cell of the N.C.E.R.T. had a few years back published a detailed syllabus in population education which the State Departments of Education and the Boards of Secondary Education may adopt to their needs. (51)

Population education in India has been taken up by the Ministries of Education, and Health and Family Planning. The Central Health Education Bureau (C.H.E.B.) of the Directorate General of Health Services had organized a Workshop on Population Education in December 1969 in which technical personnel from Health and Education organisations in the country participated. Similarly, the C.H.E.B. developed a population education guide for secondary school teachers in October 1970. It also organized a Workshop on Instructional Materials on Population Education in February 1971 and WHO Workshop on Health and Population Education in Schools during August-September 1971. (51)

Other efforts in the field of population education worth noting are: A workshop on Population Education was organized by the Faculty of Education and Psychology, M.S. University of Baroda and the Baroda Community Development Service in September 1969 for educating teachers and principals of the secondary schools. In December 1969 the Pathfinder

Fund (New Delhi) organized in New Delhi a Teachers' Workshop on Population Education for fifty teachers, principals and school administrators of higher secondary schools, for three days. In May 1970 the Regional College of Education, Bhopal, in collaboration with the Indian Association of Teacher Educators and All India Federation of Education Associations (AIFEA) organized another workshop for preparation of instructional materials and the development of a methodology for the teaching of population education in teachers' colleges. (6) In October 1970, the A.I.F.E.A. in collaboration with the Regional College of Education, Bhopal, sponsored a four-day seminar at Gwalior in population education for elementary school teachers. (51)

Thus, we have laid down the basis of a national programme of population education in this country with N.C.E.R.T. as the central agency. Population education is comparatively a new field of study with a limited expertise within the country. It is compelling that these limited resources should be fully taken advantage of by the states until the time when these constraints are removed. Dr. Edlefsen clearly emphasises the need of central control when he writes: "Essential changes will obviously be easier to achieve in those countries having a high degree of centralization than in those which leave major control to states or districts." (6) This means that under the Indian conditions, at least for some years to come, N.C.E.R.T. should function at the national level as the main agency for imparting the knowledge of population education in the country, of course, with the assistance and cooperation of the states, for population growth is a national problem.

At present, because of generous assistance by U.N. Fund for Population Activities, N.C.E.R.T. has been in a position to introduce population education in 21 States and 6 Union Territories.

At this stage, it will not be out of place if we try to find out what are the prerequisites to the formulation of a national programme of population education. Prof. Jayasuriya mentions five factors which should be identified in a national programme. They are: (37)

(1) The target group which should be exposed to population education, and the precise objectives in respect of each group.

(2) The resource persons to be used for reaching each traget group.

(3) The instructional strategies to be used.

(4) The mechanism for the production of instructional materials.

(5) Research needs and problems, including evaluation.

It will be pertinent to scrutinize these items in the light of our programme of population education.

(1) The target groups in order of priority, in a national plan of population education, should be as follows: (a) married and about to be married persons, (b) out-of-school youth and adults, (c) students in tertiary level institutions, (d) students at the secondary level, (e) students in primary school. In the present chapter all these five categories of target groups were dealt with and it should be added again that category (a) being very near to their reproductive period and their attitudes which might have acquired some rigidity will not be affected by population education but it may be taken care of by family planning education. The category (b) being as elusive as the category (a) cannot be held captive and exposed to an education or communication programme in the way the categories (c), (d) and (e) may be reached. To neglect category (b) i.e. out-of-school youth and adults on these grounds is to postpone a solution to the problem of rapid population growth. This issue has been treated exhaustively in the subsequent chapter.

(2) The source persons needed for the programme of population education on a nationwide scale should be initially the responsibility of the N.C.E.R.T. Various workshops, seminars and conferences on the subject of population education which were referred to in this section will supply to the States the necessary trained personnel. It is expected that by 1985 all the States and Union Territories will be covered by population education programme initiated with the help of UNESCO in this country.

(3) A reference has been made earlier that infusion method has been accepted as the most important instructional method, at least in the present context of things, to impart population education in our primary and secondary schools. It was suggested that this method should be strictly followed at the primary and lower secondary levels and in the last or from the penultimate classes of secondary school a mixed method i.e., infusion and unit method may be safely made use of. At this stage, it may be suggested that instead of selecting a single strategy for the entire school system, one strategy may be adopted as, for example, infusion or injection method in a specified number of schools and another strategy such as special course in the others. The N.C.E.R.T. should undertake the project of determining the relative efficacy of each of these methods so that one which is found most suitable to the Indian conditions may be applied on a nationwide scale.

(4) The initial production of instructional materials is also the responsibility of the N.C.E.R.T. Mention has been made in this section to the instructional materials produced by N.C.E.R.T. and the Central Board of Health Education. More instructional materials must come according to the common needs of the States. As the field of population education spreads within the States and as the nuclear groups of experts and specialists in population education come up in the State institutes of education, State universities and teachers' training colleges this task may be gradually transferred to the States. This trend is noticeable at present, owing to generous funding by U.N.F.P.A. Training programmes for different target groups will require different kinds of instructional materials in the form of books, pamphlets, charts, graphs, pictorial packages, filmstrips, films, radio, etc. It is, therefore, quite essential to draw up at the national level plans for their production and diffusion. Even at the later stages of the programme when the States may be asked to take up the major part of the programme the central agency in charge of population education will have to produce some instructional materials which satisfy the common needs of the States. "While there should be no insistence on a crippling uniformity or conformity, care should be taken to avoid unnecessary duplication of

effort." (37) Try-out of the materials produced may also be undertaken with a view to utilise the feed-back to improve them. The teachers involved in the production may submit the materials to field testing before it is given the final shape.

(5) A national programme of population education cannot ignore research. Population Education is relatively a new field of study and as such there are many issues which must find immediate answers if the progress of the programme is to be rapid. The Asian Regional Workshop held at Bangkok in 1970 stated the need of research in population education thus: "Unfortunately, any population education programme must begin with a number of unanswered questions. There is much that is not known. Concurrently with the development of other aspects of the programme it is, therefore, necessary to incorporate a significant research component." (62)

Research and programme evaluation should be included as part of the development of a national programme from the very beginning. There are many areas of population education which require probing in more depth to ascertain its validity. Research in this field should be essentially action-oriented and relevant to the solution of practical problems.

5

Population Education for Out-of-School Youth and Adults

At present the formal education system is hardly catering to the learning needs of about 50 per cent of the population. This leaves us with millions of out-of-school youth and adults in the country who make individual as well as collective decisions everyday affecting the welfare of the individual, family, community and the nation. These millions of people rarely have any educational programme to make them understand the dynamic of their decision-making and its consequent effects on population growth.

According to Mr. T. A. Koshi the need for population education for the out-of-school youth stems from two conditions: (1) They constitute a sizable percentage of the population. In 1970 the percentage of out-of-school youth between 6—18 years was 53. (2) They add to the eligible couple groups every year. (65) Thus the out-of-school population education in India is aimed at two groups of audiences: youth in the age group 15-20 years and adults of 20-45 age bracket.

As mentioned earlier though this group i.e. youth and adults is the most crucial from the point of view of population growth, it is the most elusive group to reach and still more difficult to hold together in an educational programme for any length of time.

The youth and young adults of today are action-oriented and as such they need to be sensitized to population issues to enable them to control their reproductive behaviour and also to take up the leadership role that they may assume as charge agents in their own communities.

Although compulsory primary education seems to be making good progress in India a large number of children either do not attain literacy or soon relapse into illiteracy because of high rate of educational wastage. There is still in our country a great percentage of youth who never had the opportunity of receiving the formal schooling. Increase of literacy in developing countries has been accompanied by an equal increase in the absolute number of illiterates. India is no exception. Thus the crux of the problem of out-of-school youth and adults lies here. The following opinions will convince us of the gravity of the situation. UNESCO has pointed out that for the decade from 1955 to 1965 the number of young people throughout the world enrolled in schools increased from about 270,000,000 to over 400,000,000. But during the same period the increase in the population of school age (5—19) was even greater. Thus, the number not enrolled in 1965 was greater than ten years earlier by 30,000,000. (70) This is simply an illustration of the magnitude of the problem.

The situation in India is not very different because, in 1961, there were 36 million more illiterates than in 1951, and in 1966 20 million more than in 1961 and the number of children still without schooling is estimated to be 63.8 million. (73) The situation has not improved as the country has added, during the past decade, 48 million more to the number of illiterates.

If we continue at this rate the situation regarding out-of-school children and youth will worsen with every increase in population in our country and in the absence of any population education to these groups the impact of their reproductive behaviour on the population growth will be unfavourable. It is necessary to contact this group through all the channels of communication available at present. Therefore, all the resources of the community should be fully exploited towards this urgent need. The out-of-school youth and adults should be educated to assume the responsibilities of pre-planned parenthood. These alarming conditions make out-of-school programmes in population education indispensable.

Lack of motivation on the part of adults poses a basic constraint, especially the illiterate and the poor, in carrying out the programme effectively. Apathy for learning usually comes from lack of relevance of learning situations to their needs. Logically, people in such a situation can be drawn into any activity, including the learning activity in case such activity is directed towards solution of some of their basic economic and sometimes psychological problems—that is why population education activities should find a linkage and integration with various developmental programmes such as food and nutrition, agriculture, employment, labour literacy, health and other social development efforts which are directed towards finding solutions to their more immediate needs.

Real boost to the out-of-school youth population programme was given in the World Population Year, 1974. However, the interest in the population education for out-of-school youth was first manifested during National Conference on Population Education in 1971. Since then Government, semi-government and voluntary organisations entered the field of adult education and took a lead in organising out-of-school youth population education programmes.

Population education for out-of-school sector acquires more relevance when interwoven into areas that interest the learners and is used as a solution to their day-to-day problems and anxieties. (64) This is accomplished by means of different types of integration approaches. Therefore, a linkage between population education and other development programmes is highly fruitful.

It is expected that integration of population education into adult education will be a rewarding proposition. National Adult Education Programme of the Government of India whose main aim is to educate the adults of different age groups is now regarded as an inclusive programme concerned with total development. The interweaving of adult education programme, population and other welfare programmes into a coherent whole affecting the social developments of individuals demonstrates a realistic and broader vision in attempting the problems of poverty and backwardness.

The Five Year National Adult Education Programme launched by the Directorate of Adult Education, Ministry of Education on 2nd October 1978, seeks to bring 62.5 million people (chiefly within the 15-35 age group) into the mainstream of the country's developmental endeavour. (63) This is sought to be done by means of a composite approach, the main components of which are literary awareness and functionality. Also an awareness of the population situation and family well-being are included in the programme.

Two national seminars, one of them jointly organised by the Directorate of Adult Education and the Family Planning Association of India in 1979 have been held and a great deal of spade work was done.

Different Strategies

One of the recommendations of these seminars laid down that the aim of the National Adult Education Programme was the total development of the individual through education, and in this context, population education was a vital component which should be integrated within the overall framework of the programme.

The principle of integration of population education into various developmental programmes has been accepted by experts as conducive to excellent results. The Consultative Seminar on Future Direction of Population Education, 1978 felt that population education for out-of-school sector acquires more relevance when intervowen into areas that preoccupy or interest the learners or are viewed as a solution, if not remedy to their day-to-day problems. (64) It is for this reason that population education is to be integrated in various non-formal education programmes including literacy.

In general the act of integration of population education into various non-formal and development programme has been done by different countries and programmes following either one or a combination of the following integration approaches: (64)

(i) *Unit Approach*: This approach calls for the development of a separate unit in population education in order to make this unit an integral part of the curriculum of an ongoing development or non-formal education programme. Such an approach is mostly followed in the training curriculum for field workers and in some cases in the curriculum for out-of-school youth and adults.

(ii) *Infusion Approach*: Here the curriculum specialist locates some separate population education concepts and infuses them in the related topics found in the contents of the development activity. This approach visualizes a greater coverage of population education topics but at the same time presents practical difficulties towards their integration into the topics of the development programme. In order to make the infusion a natural process it is necessary to identify the plug-in points in the existing curriculum of the developmental programme. Unless the plug-in points are related to the population education concepts to be integrated, the coherence and unity of the newly developed integrated curriculum will suffer. This approach is mostly being tried in the area of literary and rural development programmes.

(iii) *Core learning kit Approach*: This does not advocate the integration of population education units or concepts into any development programme directly but it tries to identify the needs and interests of the various separate groups which form the audience of a particular development programme. Then sets of relevant population education concepts are determined and developed into a variety of learning activities. Materials which are finally compiled into the form of modules or guides are called 'core learning kits'.

No research has been conducted regarding the relative superiority of one approach over the other. However, the field workers who actually make use of them will be in a practical position to adopt or even modify them to suit local conditions and needs.

The out-of-school group has an age range usually from 12 to 35 years and forms a sizable percentage of our population. In this category two sub-groups may be considered; (i) youths and adults who belong to some organized groups such as youth clubs, farmers' unions, co-operative societies etc; (ii) those who are not members of any such organization. It is comparatively easy to more successfully reach the former than the unaffiliated youth and adults. The unaffiliated and unorganized youths and adults create the major problems of communication as they are mostly spread in numberless villages of our country and as such ways and means are to be found to get them under some common fold. For that purpose it may be essential to carry out field surveys and pilot studies to determine the most affective means of reaching unorganized youth and adults.

Development of Curriculum for Out-of-School Population Education

Having found the different ways of reaching them, the next step will be to frame a suitable curriculum for them. "The development of curriculum materials that convey the message of Population Education with a minimum amount of effort on the part of the receiver would be a major activity requiring the collaboration of a nucleus of full-time staff with a considerable number of resource persons serving in an advisory or consultative capacity." (38) The objective of population education in respect of this category should be to present to them some essential facts about the impact of population growth and family size on the welfare of the individual, the family and the nation. Secondly, the youth and adults should get themselves acquainted with the other three areas of educacation i.e. family life education, sex education and family planning education in view of the special needs of this group.

Therefore, population education has to be presented in a package together with the above three areas for the illiterate youth and adults. It is the work of curriculum specialists to give a suitable blending to the package. "Two things appear to be necessary in this regard viz., (1) Preparation of a well-knit programme—a package with necessary material, (2) Training of social workers and teachers to run these programmes in schools." (51)

The operation of population education programme for out-of-school youth and adults requires the deployment of a large number of persons to work as instructors, apart from teachers who should receive a sound pre-service or in-service training under this programme. There are also a number of other categories of personnel who also need some initiation in population education as they have to deal with people in general including out-of-school youth and adults with whom they come in contact in the course of their professional work. They are doctors, nurses, public health workers, agricultural extension workers, co-operative workers, community development workers, personnel associated with literacy programmes, instructional programmes in the armed forces, etc. (38) The training of these personnel in population education will not only be useful for out-of-school youth but also for imparting instruction in population education for primary, secondary and tertiary levels.

For the success of population education for out-of-school youth and adults which will be of an extension type in nature, the use of audio-visual material is specially recommended in view of the elusive nature of this particular category of people. The programme will succeed if it creates interest in them and attracts them voluntarily.

Selecting and framing population education contents for out-of-school programme in population education present some difficulties which are not encountered in the selection of content for in-school population education programmes. This is done taking into consideration the nature of the target audience. The difficulties of the target audiences of out-of-school population education are diverse in regard to needs and characteristics such as age, educational status, religion, marital status, employment, literacy level, interest, socio-economic stutus, reading and other habits, etc.

The problem regarding target audience may be compounded further by the fact of their relative elusiveness. A part of the target audiences may be captive or volunteer audience and may be available for population education for varying periods of time ranging from a single exposure of one hour or so to several hours of instruction spread over days and sometimes weeks. Therefore, a uniform content for all such diverse groups is not possible. It is advisable, therefore, to select contents for a full and comprehensive course on population education that would require 15 to 20 hours of exposure on one hand and to lay down the content for a variety of learning packages for one or two hours duration. Since these contents will have to be chosen on the basis of the particular problems or needs of specific target groups there is possibility of some shortcomings as regards coherence and continuity of contents.

In majority of out-of-school population education programmes, the selected content focuses on (i) population—related events and their repercussions on both the quality of life of the family and on the social development; and (ii) prevailing demographic picture and its repercussions on future quality of life.

At the Consultative Seminar on Out-of-School Education Programmes in Population Education Organised by UNESCO at Bangkok in 1975 the following contents were suggested for a comprehensive programme of population education:

(1) Demographic processes;

(2) Biological, social, cultural, economic and psychological determinants of the population processes;

(3) Consequences of population changes upon the quality of life of the individual, the family, the nation and the world at large.

(4) National policies and programmes in relation to population education. (64)

The Seminar further suggested that the topic on consequences should be considered as the core or minimum contents of an out-of-school population education programme. For example, if the target audience is available for a maximum period of only one or two hours for population education then instruction at least on one selected aspect of quality of life could be imparted.

During the Regional Workshop on the Development of Materials Integrating Population Education in Non-Formal Education Programmes Organized by UNESCO at the Philippines in 1980 the participants conducted a survey of knowledge, attitudes and practices in respect of population education on a sample of villagers comprising farmers, mothers and out-of-school youth. On analysing the data collected in the survey the participants concluded that the contents of population education for this target audience could be as follows: (64)

I Basic concepts of population dynamics:
  A—Births
  B—Deaths
  C—Migration
II Factors contributing to large family size:
  A—Early Marriage
  B—Sex Preference
  C—Other pronatalist valves
III Effects of large size families on:
  A—Income
  B—Sanitation
  C—Nutrition
  D—Others
IV Consequences of large families on:
  A—The community
  B—The nation
V Measures to solve population related problems:
  A—Population Education
  B—Family Planning
  C—Increasing food production
  D—Providing income-generating activities
  E—Others.

The above core contents of population education for rural youth and adults if translated into a series of learning activities, materials etc. could be a good example of core learning kit approach.

The objective of integrated approach has been partly achieved by many countries of the world which have well-designed integrated non-formal education and other development programmes with population education as one of the major components. Adoption of such strategies for the promotion of population education is likely to have more chances of success since integration cannot be classified as an added burden but is rather a beneficial addition.

The curriculum development for out-of-school population education should be both dynamic and a continuous process growing according to the needs and interests of target audience and keeping pace with them. It should have the necessary flexibility for adaptation to the needs of different target audiences and it should be a participatory process involving all concerned to the maximum extent possible as it is interdisciplinary in nature.

Workers in various development and social welfare schemes have to make use of all possible opportunities to establish personal contact with the people to open up a dialogue on population matters as they affect the individual, the family and also the nation. Population education in the out-of-school sector especially acts as a double-edged weapon for the achievement of not only population objectives but other development objectives as well.

Agencies Involved in Out-of-School Population Education

The National Council of Educational Research and Training, New Delhi which already has a special Population Education Unit and which is an apex educational institution in the country has so far confined its activities to in-school population education programmes alone and therefore the main burden of conducting out-of-school population education programmes has fallen directly on the Government, semi-government agencies and voluntary organizations.

It has already been stated that the Directorate of National Adult Education has come to the forefront of the movement in linking adult education with population education programme by organizing two national seminars and producing necessary literature.

In this connection we should mention the programmes undertaken towards the same aim by agencies such as Population Education Projects of the University of Madras, Family Life Education Project of Literary House, Lucknow and Integrated Child Development Services Scheme.

A special mention requires to be made of Family Planning Association of India (F.P.A.I.) which has rendered pioneering services in the field of out-of-school population education. The F.P.A.I. has taken population education for out-of-school youth as one of its important programmes through its various branches in India. The strategies employed involve the establishment of population education cells, population education clubs, PENFORUM and the development of curriculum material, F.P.A.I. in using various forms of motivational and educational channels to reach the out-of-school youth. This includes talks, film shows, exhibitions, debates, paintings, sports/games, slide shows, literacy classes, essay competitions, puppet shows, meetings with youth and others.

Bharatiya Grameen Mahila Sangh is also another organization which conducts various educational courses such as craft training, functional literacy, nutrition, bakery, etc. where population education concepts have been integrated. Its Madhya Pradesh Branch at Indore conducts an out-of-school population education programme as a part of its rural women's education programme. (67)

Literacy House, Lucknow is dedicated to the advancement of level of adult literacy and promotion of adult education among the out-of-school youth. The Literacy House conducts two categories of programmes: core programme and special projects. Population education is specifically carried out by the Family Life Education Centre under special projects which disseminate population information through Family Life programmes to youth and adults in hard-to-reach rural areas.

Youth and Family Planning Council, New Delhi is a national organization run by individual membership and organised further into State Councils. Their programme is aimed at educating and motivating young people, conducting surveys and research, organizing seminars and conferences and publishing literature. They have been conducting programmes for out-of-school youth in Haryana and Orissa.

The latest census reveals that about 76.747 per cent of our population live in villages. There is a trend towards urbanization but the process is rather slow. Therefore, most of our youth live in villages drawing their livelihood from agriculture and related activities. Agricultural sector is not an organized one, like industrial labour in cities and towns and hence is difficult to be contacted for any common educational programme including population education. However, it cannot remain neglected as in the past. Therefore different organizations have come to the forefront to tackle the situation.

It will not be out of place if we mention at this stage commendable work done by the Central Board for Workers' Education in India sometimes with the help of international organizations such as I.L.O. The Board has succeeded in producing a manual for labour education which is in response to the concern to provide support for intensive educational effort in population linked with workers' education activities of trade unions and other organizations.

Recently, in July 1982 one more voluntary organization, Planning Rural-Urban Integrated Development through Education (P.R.I.D.E.), has entered the field of out-of-school youth population education by taking up a Rural Development Project in Mahad Taluka, Raigad District in Maharashtra.

The main feature of this Rural Project is the opening of, in the selected places of the Taluka, Pre-school Education Centres; Non-formal Education Centres; Study Centres for school children; Sports and Recreation Centres; Adult Education Centres; Youth Clubs; Mahila and Sakhi Mandals, etc.

It also maintains a special Core Centre at Andheri, Bombay for children with different types of handicaps coming from slum communities of Bombay.

The work done in India so far for the development of out-of-school population education is far short of the needs of the total out-of-school population in the country. Lack of suitable educational material relating to population education is another factor which has hindered many voluntary organizations from conducting this programme. As these are different agencies in the field working for the same cause it is but natural that there will be an overlapping and duplication of efforts which is a pure waste which we cannot afford. It is therefore suggested that some apex body may be created to guide and coordinate the above programmes in the interests of people and the programme.

Out-of-school population programmes in India as well as in many other developing countries have come up through a process of evolution rather than strict planning. This was inevitable since in all these countries family planning activities were going on long before the term 'population education' gained currency. (67) The impetus for the planning and development of out-of-school population education programmes came from the financial assistance offered by U.N. Fund for Population Activities and other international agencies.

Role of the School

The school again will have to assume an important role in the programme of population education for out-of-school youth and adults. "The school can be developed in a pattern so that its function does not remain confined to school children alone but fulfils the need of the entire community. Or in other words the children's school need to be transformed into a community." (51) The school will have to function as a 'community centre' for imparting population education to the out-of-school youth, by utilizing fully the available local know-how, voluntary organizations in the country and the community channels such as radio, films and other mass media for this important and demographically most urgent sector of our population.

To end, let us quote Smt. Wadia: "How to tackle the out-of-school sector poses many problems which are compounded by the fact that most of those belonging to it live in scattered villages where communication both in physical as well as mental terms is very tenuous, and where it is the elemental needs of life like food, clothing and shelter that are in the forefront. Nevertheless, some ways and means do exist and these have to be utilized to the fullest." (73)

6

Population Education Through Universities/Colleges

Upto the present times attention of educationists interested in population education was concentrated on the lower rungs of the education ladder, namely primary and secondary.

Organizations like N.C.E.R.T., New Delhi, have devoted more attention to secondary aspect of education and the concerned teacher training programmes. Primary sector has not been viewed with that much concern it indeed deserves because it is the most important stage in school children's life when attitudes are given a desired shape. Relative difficulties of introducing population matters into the primary school curriculum have been made explicit earlier as also the ease with which population education can be introduced into the secondary school curriculum. This is perhaps one of the reasons why population education in primary classes appears not to enthuse those interested in its promotion.

At higher levels, i.e. universities and colleges, population education is still on a trial stage. Excepting a very few universities in the country others have not given serious thought to introducing population education in the university curriculum.

A student when entering university education under the present pattern is about 17-18 years of age. This is a crucial stage of their lives since it is a transition from adolescence to youth which should be as gradual and smooth as possible.

Any educational approach for them should be carefully planned, organised and implemented. Population education is no exception to this.

Population education is a new concept mooted in this country in the late sixties and has taken nearly a decade from then to be placed on an implementation level and that too on an experimental basis. As a result the students of universities and colleges at present will not have any systematic preparatory background of population education as they have remained untouched by the new concept during their school education, both primary as well as secondary. Whatever population baggage they carry with them when they enter colleges at present, is gathered in non-school situations, that is mainly by informal education based on family planning programmes sponsored by the Government, through diverse media or through their contact with newspapers, magazines, films, elders, friends, etc. A systematized knowledge of population concepts is thus absent and hence it devolves on the educational institutions like universities and colleges to fill up this void in their educational career.

Educational approach to university or college students, should be indeed different from that adopted at lower levels. The students at this stage are certainly more mature and their level of understanding is of a higher range. There is no common curriculum for all at this juncture as there is a wide diversification of subjects and specialization to some extent. The curricular contents cannot therefore, be integrated with population education items as in the case of primary and secondary students.

This is the basic problem before the curriculum framers for university students as the strategy to be followed for them will have to be certainly of a different nature considering their physical, psychological and emotional development.

Infusion method is, therefore, out of the question when dealing with these students as regards population education. The U.G.C. has realised this difficulty and suggested the introduction of population elements in the Foundation Courses of the Universities and also as a part of their co-curricular activities by offering them a scheme of Population Education Clubs.

As a matter of fact participants in university and college level education would have been the priority target audience in a programme of population education since it is this group that is the nearest to the reproductive age and their fertility behaviour is of utmost importance. For one reason or the other or because of practical difficulties involved, this has not been done though it is in national interest.

In 1982-83 the University Grants Commission (UGC) issued a circular recommending a foundation course in population education and establishment of population education cells or clubs in all institutions of higher learning.

Family Planning Association of India (FPAI) which is a pioneer voluntary organization dedicated to the solution of population problem of the country and which has a long background of field work and experience in population matters had come forward with a missionary zeal to take population education to university and college levels.

As far back as 1977-78 FPAI had offered population education projects to several universities in the country. The proposal was first accepted by the Population Studies Cell in the Adult and Continuing Education, Department of Madras University. The cell has done useful work in developing considerable degree of expertise since its inception and owing to its growing reputation as a resource centre for the southern areas, it could secure financial support from April 1983 from the State Government. The cell was instrumental in developing a foundation course for undergraduate students and reading material for village youth in population education. In 1982 a degree level course and a post-graduate diploma course were introduced.

The Population Education Cell of Utkal University, Bhubaneshwar undertook many activities including training of faculty in charge of the population education clubs in five affiliated colleges. It has produced a research study entitled *Population and Family Planning in Tribal Areas*.

In December 1983 the University held a two-day joint seminar on "Population Development and Environment—The Challenge of the Century" with FPAI. It is contemplated that students undertaking NSS programmes with the community, be motivated and trained to create population awareness among the villagers.

Smt. Nathibai Damodar Thackersey University (SNDT), Bombay had by 1983 a very active population studies cell. It had 11 population education clubs located in affiliated colleges of Maharashtra and Gujarat states.

Population Studies Cell of the University of Udaipur (Rajasthan) in collaboration with State Institute of Education, Research and Training and the Education Department has planned population education syllabi for school and college levels. The cell has established four rural/tribal clubs to take the message of population education to rural areas.

Gujarat Ayurved University, Jamnagar, has established a population education cell which has evolved and is implementing a course in population education for undergraduate and graduate students and has finalised a short-term programme for schools and colleges. The cell has established two population education clubs in its affiliated colleges at Baroda and Ahmedabad.

By 1983 two more universities took the lead, one of them being Osmania University, Hyderabad. It has now a Population Studies Cell in the Department of Sociology. Seven population education clubs have been established in city colleges and three in district colleges keeping in mind the need to involve different disciplines.

Also in 1983, Jamia Millia Islamia University, New Delhi, established its Population Studies Cell in November 1983. The cell is in its initial stage in training the personnel required for manning it.

Some universities like Gujarat Vidyapith, Ahmedabad are integrating population education in their programmes of Adult and Continuing Education. In Gujarat Vidyapith, population education forms an integral part of the adult education programme. It is interwoven with the various aspects of the programme in all its stages of: (i) basic literacy; (ii) post-literacy; (iii) training of adult education functionaries; and (iv) supplementary reading. The Gujarat Vidyapith has developed a population education information centre in its library.

Prior to all this, attempts have been made in our country in the seventies to introduce population education at the university and college levels. Population Education Centre, M.S. University of Baroda has produced good amount of instructional material on the subject regarding population education at the school level and also colleges of education.

The Population Studies Centre of Shri Venkateshwar University, Tirupati (A.P.) has been active for over a decade and has succeeded in introducing population education as a subject at post-graduate degree level.

The University of Bombay has also been instrumental in introducing foundation courses based on population education for its three-year degree courses.

The University Grants Commission has taken a concrete lead in the spread of population education. The U.G.C. Chairman has been writing to Vice-Chancellors of the universities about the critical need of population education programme. The U.G.C. has also published a "Lecture Series on Population Education". This has been widely circulated amongst the universities and colleges. (78)

So far three national workshops on population education through universities/colleges have been held. The first workshop was held in March 11-13, 1983 in New Delhi.

The workshop recognized:

(i) that universities and colleges have a vital role to perform in promoting the spread of population education as part of its extension efforts to cover such priority target groups as illiterates/neoliterates, out-of-school youth and college youth;

(ii) that universities and colleges can draw on experiences gained in population education at the school stage by the NCERT and for the other groups by some voluntary organisations in such aspects as project formulation training of trainees and grassroot functionaries, production of learning materials and appropriate communication strategies;

(iii) that some universities and colleges have already acquired considerable experience in population-related studies (through teaching, research and extension) and in population education (through adult, continuing education and extension);

(iv) that universities and colleges need to widen their involvement both in population-related studies (through adult, continuing education and extension) through an intensive utilization of existing infrastructures in population-related studies and in population education;

(v) that universities and colleges need to be helped through a process of dissemination of resource information in project formulation, training, learning materials, communication media and research; and

(vi) that in concrete terms, universities and colleges need to integrate population education in their adult education/community education programmes, in formal curricula in higher education, and through short-term courses and co-curricular activities both for the college youth and youth in the community.

In order to implement the above, it requested the U.G.C. to formulate a scheme with a project officer in population education in all centres of Adult, Continuing Education and Extension with programme grants to cover both the functions of the centre at the university level and to implement the programme in the colleges.

The Workshop also suggested that IUACE should take up the responsibility of centralizing and disseminating population related information in and through universities and colleges. The IUACE was also entrusted with the work of undertaking a project of training .of trainers and grassroot functionaries in population education and also to set up a pool of resource persons to help universities and colleges formulate and implement programmes in population education.

The Second National Workshop held at Gandhigram in October 1983 stressed the urgent need to involve universities and colleges in organizing programmes of population education for students and the general community. Also it emphaized intensive training of teachers responsible for organizing these programmes.

Secondly, the Workshop felt that in order to make the community aware of the implications of population explosion there should be a linkage between population education and adult education programmes of universities and colleges. Further, it laid down that universities/colleges should organise population education clubs with the objective of creating awareness in the students about the importance of population education. It also suggested some monetary incentives to strengthen the activities of these clubs and adult education centres.

As a result of the recommendations of the Second Workshop, the U.G.C. prepared a scheme of Population Education Clubs through Universities and Colleges with the objectives of making the student community aware of the dynamics of population and to make them understand the determinants and consequences of the population problem and also to appreciate the need for 'small family norm.'

These objectives are to be achieved by means of various types of co-curricular activities such as debates, essay and elocution competitions. painting competitions, quiz programmes, lectures by experts, audio-visual material like graphs, charts, etc., dramas, organization of extension programmes, adoption of a village and organization of population education programme therein, etc. The U.G.C. scheme also proposed that population education clubs could function independently or as an activity of the Departments of Population Education or Departments/Centres of Adult, Continuing Education and Extension Education or Department of Education. However, the coordinating responsibility should rest with one of these departments.

The scheme also prescribed funds to the extent of Rs. 3,000 p.a. to university/college to organise activities of population education clubs; Rs. 250 p.a. for adult education centre for promotion of population education activities among adults and upto Rs. 10,000 p.a. for universities for the purpose of implementation, monitoring, training, coordination and material etc. of population education clubs through colleges depending upon the size of the programme. The assistance from the U.G.C.

will be available upto 31-3-1990 on the basis of satisfactory implementation of the scheme by the universities/colleges.

The Third National Workship on Population Education through Universities/Colleges held at Panaji, Goa, in June 1984 took stock of the recommendations of the earlier workshop and made suggestions of a broad general nature strengthening the movement of population education clubs already launched by some universities such as Delhi University where population education clubs are very active.

The Workshop emphasised that population education clubs should have specific activities at the institutional and community level. The usual institutional activities may comprise various types of competitions with population elements. The clubs in the colleges must also rely on traditional oral culture programme at the community level for a better understanding of their own culture.

Suggestions were made in the Workshop to accelerate the population education programme as many universities had not entered the field so far. The U.G.C. was also asked to provide funds for materials for education in population education.

It is a happy sign that universities in the country have realised the gravity of the population situation and are pooling their efforts in a proper and concerted way under the joint leadership of the University Grants Commission and Indian University Association for Continuing Education.

7

Environmental Education

Man is a part and parcel of his environment. Primitive man observed nature with all its beauty and mysteries with joy and awe. In pre-Vedic and Vedic periods the Indo-Aryans lived in the midst of nature's grandeur and splendour. Bountiful nature with its snow-clad peaks of the Himalayas, boundless seas, ever-flowing rivers, vast and green meadows had a profound and stirring influence on their minds and the first pre-Vedic period literature in the form of hymns to nature sprang up. In short, the phenomena of nature were personified and deified.

Gradually, man began to unravel the mysteries of nature, one by one, with his inquisitive mind and hard work. Today we no longer think of nature as a personified being. There is a struggle going on between man and nature in which the former is trying to dominate the latter. Man with all his arrogance claims no longer to be nature's slave but its master. The efforts towards the mastery over nature have been facilitated because of science and technology.

The history of civilization, in fact, may be regarded as a progressive control over nature by men to satisfy his greed for material progress by utilising environmental resources to meet his ever-increasing demands and to enjoy higher and higher standards of living. The history of the twentieth century testifies especially the havoc caused by man in unilaterally annihilating his own environment to the extent of causing serious ecological and environmental imbalances.

Indiscriminate cutting down of forests has caused extension of many a species of flora and fauna. This deforestation has consequently resulted in eroding the soil, increasing the incidence of floods which modern science and technology is not able to control completely. There is an ever-increasing encroachment on grasslands and crop lands resulting in shortages of food for cattle and human beings. Increased industrialization has led to atmospheric pollution by poisonous gases like carbon monoxide, sulphur dioxide and many others. Disposal of industrial waste has created the problem of poisonous marine life. Industrial development and consequent urbanization is creating innumerable problems like slums, air and water pollution, sound population, radiation and a variety of others. The unabated use of insecticides and pesticides and the industrial and nuclear fall-outs and fly ash are increasing pollution in alarming proportions and consequently creating health hazards. These are stray instances how man in his quest to win over nature has created environmental deterioration and imbalances which in the long run will risk his very existence on this globe.

Writing on 'Development' C. Alvares states: "The industrial system remains an unprecedented form of resource exploitation, based, neither on notions of permanence nor on any reasonable criteria of genuine efficiency. Referring to the so-called developed nations of the world he opines that the advanced societies are exhausting their resources at breakneck speed and are attempting through multinational and international financial institutions to control the resources on which others have depended for a living for centuries. (75)

In economic terms it may be said that the resources of a country and consequently of the world are not absolutely unlimited. There are two types of natural resources: plenishable and non-plenishable. Animals, plants, water, air, may be to some extent considered as plenishable resources but man is misusing or rather overusing these resources of nature with such a hard hand that he hardly gives any thought towards their replenishment.

Developed countries with their technology based civilisation and with insignificant percentage of world population to support have command over a very large chunk of world resources. It is estimated that "One American, for example, consumes some 30 times as much oil and scarce minerals as one Pakistani. He is responsible for a very much higher level of pollution of the air and water of the earth. His consumption makes him more responsible for overfishing the seas, exterminating animal species, poisoning and killing inland lakes and other degradations. (45)

The problems of the West are, therefore, problems related to an over-consuming society vis-a-vis world resources. Population education thus has entered the educational curriculum through ecology in these countries.

After exploiting nature too far, of late realization has dawned upon man to control his behaviour and avoid this global malady. The Conference on Human Environment sponsored by the United Nations at Stockholm in 1972 issued a declaration pledging to defend and improve the environment for present and future generations. While addressing the plenary session of the Conference, Prime Minister Indira Gandhi among other things said: ". . . . The modern man must re-establish the unbroken link with nature and with life. He must again learn to invoke the energy of the growing things and to recognise as did the ancients in India, centuries ago, that one can take from the earth and atmosphere only so much as one puts back into them". (53) Enrichment of our physical, social and cultural heritage should be a part of our being, from generation to generation. In this context it is pertinent to quote a Chinese proverb which says—If the son does not prove to be wiser than the father, then both are losers. In short, the father has for his duty to endow his son the wisdom of his lifetime so that the son may enrich it and pass it on to the next generation.

Stockholm Conference of 1972 laid down for the first time the foundation and the framework for a common basis for international environment education. This was followed by a number of national and international meetings and conferences in which the question of environment protection and promotion was given considerable thought. The first inter-governmental conference on environmental education was convened by UNESCO in Tbilisi, Georgia (U.S.S.R.) in October 1977. The

Tbilisi Declaration was a landmark in the field of environmental education as it provided guidance for the development of environmental education at all levels i.e. local, national and international and also for all age-groups, inside and outside the formal school system. (53)

Environmental Education in India

The situation in India as regards environmental destruction is not different from that in other developing countries. Efforts are being made in this country to retain ecological balance by various available means but the pressure of growing population is so tremendous that it eats away most of our achievements. To maintain the required ecological balance a minimum of two-thirds of the earth's surface should be covered by forests.

According to Sir John Boyd Or, excluding North and South Polar areas, 40 per cent of the earth's surface i.e. 23 million square miles, was occupied by forests but the ever-demanding man has brought it down to 15.4 million square miles. (59) So, one-third of the total area under forests has been effaced from the earth's surface with serious ecological consequences.

In India in 1951-52, 2.77 lakh square miles of land was under forests. In a period of five years from then i.e. in 1955-56, six thousand square miles were deforested. (59)

It is to be noted that a teak wood or jungle wood sapling takes about 30 to 35 years and 20 to 25 years, respectively for reaching its fullest growth. Under such circumstances it appears doubtful if our tree plantation programme will be in tune with our forest destruction activities. However, the Government is aware of the fact and has launched a comprehensive programme in this direction by enacting suitable legislation. As a result forest plantation which in 1973-74 was occupying an area of 2,113 thousand hectares has risen to 3,807 thousand hectares in 1980. (59)

It has been estimated that 53 per cent of our land area is endangered with serious degradation and 70 per cent of the available water is polluted. So much so that some states in India are considering legislation to give special powers to state forest protection force to tackle the problem of illegal felling of trees. In a recent study by National Remote Sensing Agency

(NRSA) it has been revealed that the country has lost almost three per cent of its total forest area in the last seven years. If this alarming high rate of deforestation was allowed to continue we would be inviting an ecological disaster on a large scale for India. There is still greater need to preserve forests because India is primarily an agricultural country and agriculture, which is the chief occupation of its people, is entirely dependent on the success of monsoons which in its turn depends to some extent on the existence of thick forests in the country.

Urbanization in India is proceeding at a reasonable rate. At present about one-fourth of the total population live in 3,245 cities and towns. Urbanization implies encroachment on limited agricultural land, thus causing deforestation with its consequent bad effects. It also brings forth the evil effects linked with industrialization like air, water and sound pollution, and other health hazards.

Destruction of environment under the Indian conditions is especially unwanted and undesirable. To quote the Late Prime Minister Indira Gandhi: "Environmental problems of the developing countries are not a side-effect of excessive industrialisation but reflect the inadequacy of development." (53) On the contrary, big strides in science and technology in so-called developed countries have led them to a direct struggle with nature. The latter seems to be receding in the background. High purchasing power resulting from widespread industrialization and mechanised farming have given them a free hand to control the resources of the developing countries, in order to enhance their standard of living to still higher levels.

Environmental education is therefore a must for both the developing and the developed countries with slightly different contents.

The N.C.E.R.T., New Delhi has developed national curricula for all stages of education specially emphasizing the following aspects of environmental education:

(a) *Population*—History of population growth, population growth crises and problems of unplanned population.

(b) *Land*—Land use, land reclamation, land and soil conservation.

(c) *Resources and their uses*—Resources uses, conservation, recycling, water uses and conservation, energy uses and conservation.

(d) *Food and Nutrition*—Food production, types, quality and supply, uses of food, food adulteration and preservation, nutritive value of foods, balanced diet, deficiency diseases and their eradication.

(e) *Conservation*—Conservation of wild life, forests, water and air, conservation of other renewable natural resources, preservation of natural beauty.

(f) *Pollution*—Pollution of water, air and soil, noise pollution by pesticides and other chemicals, waste disposal.

(g) *Health and Hygiene*—Individual, family, community and social health and hygiene, health hazards, communicable and non-communicable diseases.

(h) *Man in Nature*—Man in relation to other components of biosphere, environmental quality and man's future on earth.

Population constitutes one of the most important components in the above curriculum. Improvement of quality of life is one of the major aims of population education. The syllabus of population education developed by the N.C.E.R.T. in 1971 contains many of the above points as the syllabus was woven around the five major areas: (i) Population growth; (ii) Economic development and population; (iii) Social development and population; (iv) Health, nutrition and population; and (5) Biological factors, family life and population.

In comparison with the above, population education syllabus seems to be more of a specialised nature but falls within the broad outline of environmental education curriculum.

From ancient times man has lived happily with nature. He has tried to identify himself with his environment. Even in modern times eminent personalities like Rabindranath Tagore and Mahatma Gandhi have shown the efficacy of environmental approach in education. According to Tagore the present day schools deprive the child from obtaining a full and first hand knowledge of God's handiwork—the nature—and make too much of artificial methods as aid to the reception of knowledge than of the natural method of finding books in brooks. Similarly, Gandhiji's idea of 'basic education' contains as an essential element—correlation of the curriculum with the productive activity and the physical and social environment. The Report of the Education Commission (1964-66) incorporates also the best that 'basic education' has to offer, and lays emphasis on the internal transformation of education so as to relate it to the life, needs and aspirations of the nation.

It should not be forgotten that India has a long tradition of using environment as a basis of learning though the contemporary thrust on environmental education to meet the urgent needs of Indian society may be an innovation. It must be realised that man's destiny is linked with nature with a thin but unbreakable thread. His welfare and future lies, therefore, in strengthening this bond.

To sum up, we may quote the declaration of U.N. on World Conservation Strategy issued in 1983. "Ultimately, the behaviour of entire societies towards the biosphere must be transformed if the achievement of conservation objectives is to be assumed. A new ethic embracing plants and animals as well as people, is required for human societies to live in harmony with the natural world on which they depend for survival and well-being. The long-term task of environmental education is to foster or reinforce attitudes and behaviour compatible with this new ethic."

ANNEXURE

The Perspective of Population Situation of Goa

On 19th December 1961, Goa was liberated from the Portuguese rule which existed there for four and a half centuries. Goa under the Portuguese was one of the three districts which along with the districs of Daman and Diu formed the so-called 'Estado de India' (State of India).

After the liberation, the Union Territory of Goa, Daman and Diu was integrated with the Indian Union and included in the First Schedule to the Constitution with other Union Territories.

Geographical Situation of the Territory

The territory consists of three land blocks situated on the West Coast of the Indian Peninsula separated from one another by a distance of over 500 kms. and which together form the three districts of Goa, Daman and Diu.

The district of Goa is bounded to the north by the Terekhol river which separates it from Maharashtra State; to the east and south by Mysore State and by the Arabian Sea to the West. The entire area of the Territory is 3,814 sq. kms. of which Goa occupies the biggest portion of 3702 sq. kms. which forms over 97.00 per cent of the area of the entire Territory. (14)

Population of Goa District

The population of Goa, according to the Census of 1981 which has been the second count after the liberation of the Territory, was 10,07,749 as against the total population of the Union Territory of 10,86,730 and forms about 92.73 per cent of the total pupulation. (18)

The table below gives us a clear picture of the growth of population of Goa along with decennial growth rates.

TABLE 1

Population, Density and Average Annual Variation in Density and in Population of Goa District

Year	*Present in area Population*	*Density*	*Average Annual Variation in density*	*Average Annual Variation in Population per 1000 inhabitants*
1881	4.13.727	114.6	—	—
1887	4.84.802	134.3	+3.283	28.632
1900	4.75.513	131.7	−0.217	−1.597
1910	4.86.752	134.8	+0.310	+2.364
1921	4.69.494	130.0	−0.480	−3.546
1931	5.05.281	139.9	+0.990	+7.622
1940	5.40.925	149.8	+0.990	+7.054
1950	5.47.448	151.6	+1.180	+1.206
1960	5.89.997	163.4	+1.180	+7.772
1971	7.95.120	220.2	+5.519	+34.766
1981	10.07.749	272.0	+5.180	+26.74

The conclusions from the above table are:

(1) The population of Goa was between four and five lakhs for more than 40 years.

(2) The Goan population crossed five lakh only in 1931 census and remained almost the same or slightly

above five lakhs till the year of its liberation in 1961 i.e. for about thirty years.

(3) From 1881 to 1960 i.e. in a period of 80 years the population of Goa increased by 1,76,270.

(4) From 1960-81 i.e. in a period of two decades, 4,17,752 numbers were added to the population of Goa. This means that the population of Goa nearly doubled during the last 20 years.

(5) The density of population of Goa had gradually increased from 1881 to 1960 from 114.6 per sq. km. to 163.4 but it gave a big jump forward to 220.2 per sq. km. because of huge population growth having taken place between 1960-71. It is to be noted also that the present density of population of Goa which is 272 persons per sq. km. is higher than the national average of 221 persons per sq. km. according to census of 1981. (18)

(6) The population of Goa, has shown in the past a gradually increasing trend excepting for the Census of 1900 and 1921 in which the annual variation in density as well in population is negative.

The growth of population of the Territory as well as that of Goa District can be conveniently grouped into three different stages: (1) The period between 1900-1920 (2) The period of 1920-60 (3) The post-liberation phase after 1961. These three stages represent, low, moderate and rapid growth, respectively. The following figures which compare the population growth of Goa with that of the whole country—India, very well illustrate this point:

It is evident from the above table that during the decade 1900-1910 the population of the Territory increased only by 0.11 lakhs i.e. 2.31 per cent as against an increase of 5.73 per cent for the rest of India. During the decade the population of Goa District showed an increase of 2.36 per cent only.

In the decade 1910-1920 there is a downward trend in population growth in the Territory of Goa, Daman and Diu as well as for the country as a whole. This is because of influenza

TABLE 2

Growth of Population of India, Goa, Daman and Diu and Goa District

(Population in Lakhs)

Item	*1900*	*1910*	*1920*	*1930*	*1940*	*1950*	*1960*	*1971*	*1981*
I. *All India*									
(1) Population	2383.37	2520.05	2512.39	2788.67	3185.39	3609.50	4390.73	5479.50	6838.00
(2) Percentage variation over previous Census		+5.73	−0.30	+11.00	+14.23	+13.31	+21.64	+24.80	24.79
II. *Goa, Daman & Diu*									
(1) Population	5.08	5.19	5.03	5.38	5.84	5.98	6.27	8.58	10.86
(2) Percentage variation over previous census		+2.31	−3.21	+6.98	+8.50	+2.11	+5.14	+36.88	26.57
III. *Goa District*									
(1) Population	4.76	4.87	4.71	5.02	5.41	5.47	5.90	7.95	10.07
(2) Percentage variation over previous Census		+2.36	−3.22	+6.50	+7.82	+1.21	+7.77	+34.77	26.67

epidemic of 1918 which had its influence throughout the country. The official comments on this point are: "The population of the Districts of Goa, Daman and Diu showed a downward trend of about 3.32 per cent, 3.64 per cent and 2.10 per cent, respectively. The fall is mainly due to famines, pestilence and epidemics resulting in a very high mortality rate. In addition, the employment opportunities in the neighbouring provinces or abroad created by the first World War might have resulted in migration of population to certain extent from this Union Territory." (14)

In the decade 1920-30, the population of Goa, Daman and Diu and Goa District registered an increase of 6.98 per cent and 6.50 per cent, respectively as against the all-India increase of 11 per cent. Similarly in 1930-40 the growth was 8.50 and 7.82 per cent, respectively, when for the country as a whole the percentage increase over the previous decade was 14.23.

However, the growth of population in the Territory as well as in Goa District was very slow during 1940-50, the percentage increase over the previous decade being only 2.11 and 1.21, respectively as against the national average of 13.31 per cent. "The meagre increase may perhaps be attributed to the outbreak of the World War II creating employment opportunities in the neighbouring provinces as well as abroad and thus resulting in migration of population." (14)

The rather insignificant population growth of 5.14 per cent of the whole Territory is attributed to the unstable political situation in 1954 after the liberation of Dadra and Nagar Haveli from the Portuguese and the imposition of economic blockade against Goa, Daman and Diu. It is stated that the economic blockade seems to have particularly affected the population of Daman and Diu as the rate of growth of Goa District during this decade is 7.77 as against 5.14 per cent for the whole Territory. This seems to be because of the expansion in mining activities in Goa which attracted labour from the neighbouring provinces. (14)

The large increase of population registered in the census of 1971 in Goa District from 5,89,997 in 1960 to 7,95,120 in 1971 is explained officially in the following terms: "With the liberation of the Territory in 1961, the employment potential improved to a great extent resulting in not only a steep fall in the emigration of population but also bringing about immigration of outside population to the Territory." (12)

Thus in the decade 1960-71 the percentage variation over the previous census works out to be 34.77. This rate is too high and unprecedented in the demographic history of Goa.

Another important feature of the 1971 census is the excess of male population over the female population. This fact emerged for the first time in the 1971 census and continued in 1981 census.

The following figures of population distribution between two sexes make the above statement clear:

TABLE 3

Population of Goa, Daman and Diu
(Sex-wise—1900 to 1981)

Census	*Male*	*Females*	*Total Population*
1900	2.43.439	2.64.079	5.07.518
1910	2.46.842	2.72.380	5.19.222
1921	2.36.088	2.64.816	5.00.904
1931	2.59.381	2.82.329	5.41.710
1940	2.80.175	3.03.561	5.83.736
1950	2.80.141	3.15.918	5.96.059
1960	3.02.534	3.24.133	6.26.667
1971	4.31.214	4.26.557	8.57.771
1981	5.48.450	5.38.280	10.86.730

The above figures indicate the sex-wise split up of population for the last 80 years. It is evident that upto the census of 1960 there is an excess of females over males. This is also true separately of each of the three districts: Goa Daman and Diu. The following figures show the population by sex in these three districts in the census before liberation and the census of 1971.

TABLE 4

Population of the Districts of Goa, Daman & Diu

(Sex-Wise)

Districts	1960			1971		
	Total	*Male*	*Female*	*Total*	*Male*	*Female*
Goa	5.89.997	2.85.625	3.04.372	7.95.120	4.01.362	3.93.758
Daman	22.390	10.851	11.539	38.739	19.070	19.669
Diu	14.280	6.058	8.222	23.912	10.782	13.130

Figures of 1981 census show 4,97,597 females and 5,10,152 males for Goa; 24,486 females and 24,074 males for Daman and 16,197 females and 14,224 males for Diu.

It can be observed from the above figures that all the three districts which form the Union Territory, had in 1960 sex-ratio of population in favour of females. This trend has been maintained by the districts of Daman and Diu in 1971 and 1981 censuses but has been reversed in favour of males in the case of Goa. This fact has reflected itself in the final figures of the Territory in 1971 and 1981 as the population of Goa forms about 92.6 and 92.73 per cent of the population of the Union Territory in the above census. Thus Goa has fallen with the national pattern of sex distribution of population, having 981 females per 1,000 males as against the national average of 936 females per 1000 males as per 1981 census. (18)

The following table will make matters clear as regards the sex ratio of population in the Union Territory as well as the districts of Goa, Daman and Diu and in comparison with the country as a whole.

TABLE 5

Population Sex Ratio of Goa, Daman & Diu and India

Sr. No.		*Sex Ratio*		*(Females per 1000 males)*
		1960	*1971*	*1981*
1.	India	941	930	936
2.	Goa, Daman & Diu	1071	989	981
3.	Goa District	1066	981	975
4.	Daman District	1063	1031	1017
5.	Diu District	1357	1218	1139

It is stated by Dr. V.A. Pai Panandiker and P.N. Chaudhuri in their recent study on Goa that the majority of talukas out of 11 joining the Goa district have more males than females.

They further add, "Arising from this, the important social implication is that the proportion of 'incomplete' families is high in almost all talukas. The impact of the 'incomplete' families arising out of the out-migration of adult males on fertility rates could be a major one and deserves to be further studied . . . . " (56)

Live Births and Birth Order

In 1970, it is estimated that 16,303 live births took place in Goa. Out of them 3685 were births of the first order, 3539 of the second order 3,024 of the third order and remaining 6,055 of the fourth and higher order. However, these figures include 226 twins and 210 births whose order is not known. (15)

Working out the percentages of the order of births to the total of live births during 1970, we get;

lst order births	22.6 per cent
2nd order births	21.8 per cent
3rd order births	18.5 per cent
4th and higher order births	37.1 per cent
TOTAL	100.00 per cent

It was seen earlier that the lower the proportion of the 4th and higher order births, the lower is the birth rate. This was stated in connection with India when the order of births of some selected countries was compared with that of India.

On an analysis of the above figures, the same conclusion stands good. It can be derived that out of total live births, 62.9 per cent are from lst to 3rd order and the remaining 37.1 per cent of 4th and higher order. So, if the fourth and higher order births are prevented, it will be helpful in still improving the population situation in Goa. Though in absolute numbers and growth rate Goa's contribution to the population problem of India may not be of great concern, this step is necessary for providing a still higher quality of life to the existing familes and the future generations and this is possible if people in Goa accept the small family norm, just now, outright, without any delay. By doing so, the Goan people may stand to gain by achieving a higher standard of living and may thus give a lead to other parts of the country and serve as a model for them. In this connection Dr. Panandiker opines that, "it appears that Goa will be able to achieve very soon the Net Reproduction Rate of one which basically means the two child norm, much before the end of the present century." (56)

In an earlier Chapter while dealing with the Indian population we have stressed the importance of the age at marriage being one of the powerful factors influencing population growth. It is noted from the official statistics published by the Govt. of Goa, Daman and Diu that out of the total of 3784 marriages that took place in this Territory in 1970, 1381 and 1630 marriages took place between the age 15-19 years and 20-24 of girls, respectively i.e. 79.5 per cent marriages of girls are performed between 15 to 24 years. (15) The mean age of marriage according to 1971 census was 26.13 in the case of males and 21.46 for females.

TABLE 6

Live Births by age of Mother and order of Births in the Territory of Goa, Daman and Diu

Year 1971		*Births order*			
Age of mother	*Total births*	*1st*	*2nd*	*3rd*	*4th and higher*
Below 15	—	—	—	—	—
15—19 years	1123	813	169	56	85
20—24 years	7003	3125	2132	1015	731
25—29 years	8077	1262	1903	2102	2810
30—34 years	4843	333	640	977	2893
35—39 years	2410	97	174	305	1834
40—44 years	587	24	35	61	467
45—49 years	220	13	26	16	165
50 and over	153	8	16	12	117
Not stated	420	55	41	36	288
Total	24836	5730	5136	4580	9390

Similarly, the relationship between the age of mother and number of live births in 1971 convinces one that Goa is broadly following the national pattern. This is evident from the first and second columns of the preceding table and in comparison with the table 2.6 (columns 1 and 3).

The preceding figures throw light on important demographic facts of the Territory: (1) 76.5 per cent of the births of the first order took place between the age 20-29 years; (2) 78.5 per cent of the births of the second order and 68.5 per cent of the third order also took place between the same ages; (3) 80.2 per cent of the births of the 4th and higher order took place between the age of 20 to 34 years; and (4) 37.8 per cent of the total live births in the Territory are 4th and higher order births in 1971. This is a very high percentage. These 4th and higher order births should therefore be our target of attack by family planning methods, especially the age group 25-34 years which adds substantially to our population growth.

Education and Urbanization

It was discussed earlier how the Western countries could stabilize the birth rates on a low level i.e. on a par with the declining death rates. Growth of industries with the consequent urbanization helped in the propagation of small family idea which was reinforced by the spread of general education among the masses, especially women, and resulted in a better understanding of the advantages of limited families.

The situation in this respect in Goa is similar to that of the rest of India. Urbanization in Goa is proceeding at a very slow pace. According to the census of 1981 out of the total population of the Goa district of 10,07,749, nearly 67.97 per cent were living in rural areas and the remaining 32.03 per cent in Urban areas. The percentage of urban population in Goa District is 32.03 as against 32.37 of the whole Territory and the national average of 23.31 in 1981. (18) Therefore, though the degree of urbanization of Goa is a bit higher than the national average, Goa still remains an agricultural region.

The progress of urbanization will be better judged if we compare the figures of the last two census counts of the Territory. The percentages of urban population to the total population in 1971 and 1981 for the country as a whole, for the Union Territory and its three districts separately are as follows:

TABLE 7

Urban Population of Goa, Daman and Diu

(In Percentage)

Sr. No.	*1971*	*1981*
1. All India	19.91	23.31
2. Goa, Daman and Diu	26.44	32.37
3. Goa	25.56	32.03
4. Daman	44.70	43.25
5. Diu	25.99	26.36

The above figures reveal that of the three districts which form the Union Territory, Goa District is forging ahead towards urbanization. This is certainly due to the influx of population, consequent upon the industrial expansion of Goa District. In pre-literation days Goan economy depended mostly on imports. Considerable progress has been made after the liberation of the Territory which did not have advantage of the first two Five Year Plans. The aggregate plan expenditure over the last decade would work out as under: (14)

(In crore rupees)

	Plan Periods	*Total Expendiiure*
1.	Third Plan Period (1963-64 to 1965-66)	15.59
2.	Three Annual Plans (1966-67 to 1968-69)	19.82
3.	Fourth Plan	
	(a) Actual upto 1971-72	20.77
	(b) Expected during (1972-73 and 1973-74)	24.54
	Total	80.72

Taking the average of the population of the Territory over the period in round figures as 8 lakhs, the per capita development expenditure upto the end of the Fourth Plan comes to Rs. 1000 approximately. These economic measures have stepped up the per capita income of the Territory from Rs. 694.4 in 1967-68 to Rs. 714.9 in 1968-69 as against all-India per capita income of Rs. 560.8 and Rs. 554.7, respectively. (14) Subsequent plans have given a boost to Goa's per capita income which in 1977-78 went up to Rs. 1891 at current prices against Rs. 1163 which is the national average. (56)

Out of agreed outlay of Rs. 192 crores in the Sixth Five-Year-Plan the Territory had utilized Rs. 118.42 crores upto 1982-83. In 1980-81 the per capita income of Goa at current prices reached Rs. 2058 against the national average of Rs. 1379. (16)

Education in Goa has made great progress since the liberation of the Territory. Before liberation educational opportunities were confined to the Portuguese course of Lyceum and English education upto the high school level. There were no institutions of higher education in Goa, the only exception being Goa Medical School. After liberation, all branches of education have received a tremendous impetus and the number of institutions, students as well as teachers increased considerably.

Thus in 1982-83 the Territory had 8 colleges of professional education, 10 colleges of general education, 271 secondary level schools, 421 middle schools, 1272 primary schools, and 32 vocational and professional schools. (56)

The educational advance made by the Territory is really noteworthy. Due to sustained and unprecedented expansion of primary education and many literacy drives the percentage of literacy of the Territory in 1981, was 56.66, and that of Goa District 57, the latter having literacy percentage of 66 for males and 48 for females. These figures compare favourably with the all-India figures of 36.2 per cent in 1981, the percentage literacy of females being only 24.9. (18)

It is worthwhile to note the steep increase in literacy percentages in Goa during the last 20 years:

Year	*Total percentage*	*Males*	*Females*
1961	31	39	24
1971	45	55	36
1981	57	66	48

It is evident that women's education has made great strides in Goa since their literacy percentage has doubled in a period of two decades.

Further statistics also reveal the fact that education of girls has been increasing rapidly in Goa if we examine the enrolment of students at various levels of education.

TABLE 8

Enrolment at Various Levels of Education

	Primary (Cl. I-IV)	*Middle (Cl. V-VII)*	*Secondary (Cl. VIII-X)*	*Higher Secondary (Cl. XI-XII)*	*Colleges (General and Professional Education)*
All girls	66.467	35.441	24.091	4.334	7.132
(Total all boys & girls:	1.41.195	79.313	54.088	9.802	15.766

Goa has ascended to the fourth place from the seventh from 1961-71. The census of 1981 ranks Goa in the fifth place preceded by Mizoram (59.50%), Delhi (61.06%), Chandigarh (64. 68%) and Kerala (69.17%). (56)

In the Territory of Goa, Daman and Diu, the largest expenditure under social services is accounted for by education. The per capita revenue expenditure on education has gone up from Rs. 4.65 in 1963-64 to Rs. 32.98 in 1970-71 or by about 609 per cent. The actual expenditure has gone up from

Rs. 31.27 lakhs to Rs. 277. 35—an increase of about 787 per cent. The proportion of educational expenditure to total expenditure on social services has gone up from 41 to 55 per cent. (14) The figures for 1983-84 reveal that the total expenditure on education was Rs. 1630 lakhs. The per capita revenue expenditure on school education was Rs. 142 and the expenditure per student was Rs. 573.

It appears, therefore, from the above discussion that because of propagation of general education the spread of the small family norm will be comparatively a task less difficult to achieve and the message of small family can make an easy headway through the Government family planning programme for those about to enter the reproductive group or those already in it. It is estimated that in 1979 there were 1,54,000 couples in the reproductive age-group.

The family planning programme in the Territory was initiated by the local government only in 1964. Prior to this family planning programme was non-existent. The Portuguese regime like other Fascist regimes of Hitler and Mussolini encouraged pro-natality factors. From 1964 sterilization facilities in the Territory have been introduced in more than ten hospitals and the contraceptives are being distributed through a number of family planning centres, and 66 rural centres in the Territory. (14) At present there are 5 urban health centres, 16 primary and 77 health sub-centres. Besides, there are 32 family welfare clinics in the Territory according to health Department statistics.

The launching of Primary Health Centre Scheme with its extension staff has strengthened the family planning work in the rural areas. Since January 1966 loop insertion programme was also introduced. In the last 20 years 26,389 sterilization operations were performed. Besides these, 6,441 loop insertions were also undertaken. What impact the family planning programme has made on the birth rate of the Territory is yet to be evaluated as the programme is now two decades old. However, it will be interesting to note the trend of crude birth and death rates in this Territory in comparison with the rest of India in the last eight years.

TABLE 9

Estimated Birth and Death rates in Goa, Daman & Diu 1901-1981

Sr. No.	*Decade*	*Crude Birth Rate*		*Crude Death Rate*	
		Goa	*All-India*	*Goa*	*All-India*
1.	1901-10	21.7	49.2	22.1	42.6
2.	1911-20	29.1	48.1	26.9	47.2
3.	1921-30	29.8	46.4	21.6	36.3
4.	1931-40	27.3	45.2	19.9	31.2
5.	1941-50	26.5	39.9	18.6	27.4
6.	1951-60	28.9	41.7	14.0	22.8
7.	1961-70	26.0	37.0	12.0	15.9
8.	1971-81	21.35	33.5	6.8	12.5

The above table illustrates clearly the difference in crude birth and death rates in the Territory in comparison with all-India averages. As regards the birth rate the Union Territory is in a favourable position as is evident from the fact that throughout the period of about eighty years from 1901-1981 Goa has been having comparatively lower crude birth rates than the rest of the country. Similarly, crude death rates position is much in favour of the Territory which had throughout this period death rates lower than the rest of India.

Goa has been in the forefront in the control of birth rate in the country. Goa is likely to achieve two child norm by the end of this century. This spectacular performance has concentrated the attention of the demographers and population research institutes in the country to investigate the causes of low fertility rate in Goa. One such study has been conducted by Director of the Centre for Policy Research (CPR), New Delhi. Another one is being conducted by the International Institute for Population Studies, Bombay. Their findings are yet to be published.

According to the Sample Registration System of the Registrar General of India, Goa had recorded a birth rate of

21 per thousand by 1979 which is one of the lowest fertility areas in the country. The national average is about 35 births per thousand.

Next to Goa, comes the State of Kerala which succeeded in bringing down the birth rate from 31.6 per thousand in 1970 to 25.3 per thousand in 1978.

Dr. Pai Panandiker opines that, "... a whole range of developmental factors of socio-economic nature, a considerable level of small family consciousness among people and absence of any strong political opposition to the programme seem to have had an impact on the fertility behaviour." (56)

According to him five major factors are responsible for this situation: (1) The ratio of doctors to population; (2) infant mortality; (3) reasonable percentage of male and female literates; (4) female participation rate; and (5) a good transport and communication network.

The ratio of number of doctors to the total population was as low as 1.1119 in 1979-80 and the correlation of number of doctors per 1000 people to birth rate was —537.

Goa has perhaps one of the lowest infant mortality rates in the country—32.64 per thousand live births in 1979. The Working Group on Population Policy of the Planning Commission had emphasised the need to bring down the infant mortality to 60 per thousand live births by the end of the century, as they think such a reduction will reduce both the birth and death rates. In fact this phenomenon has already taken place in Goa. Perhaps this may be one of the reasons for low fertility rate in Goa.

Dr. Pai Panandiker in his above study worked out the relationship between male and female literacy percentages on the one hand and birth and death rates on the other and found out correlations of −0.513 and−0.799 in respect of birth rate and −0.437 and−0.819 in respect of death rate. This means that better education will not only prevent deaths but also births to a considerable extent.

There was also a fairly high relationship between female participation in working force and both birth and death rates. The respective coefficients were −.515 and −.817.

A good network of transport and communication has also a salutary effect on population dynamics. For example, as per findings of Dr. Pai Panandiker both birth and death rates were highly correlated negatively with the length of surfaced roads in Goa which is 344 kms of surfaced road as against 59.4 kms for the country as a whole. The correlation result in this particular case was —.732 with the birth rate and —.748 with the death rate. (56)

The above socio-ecnomic variables show their relative impact on the demographic scene of Goa which is encouraging and require to be replicated on the national level.

People of Goa are becoming conscious of a small family norm. Awareness of population problem and the need for a small family norm was adjudged by the author during a survey conducted by him in 1974 on a representative sample of 2000 Goan school students, 500 teachers and 500 parents. It was found that the awareness of population problem was as high as 70.3 per cent in the case of students and 95 per cent and 96 per cent in respect of teachers and parents respectively. Similarly, predilection for small family was shown by 86.1 per cent of students and 90 per cent of parents. (58)

Similarly, universality of marriage which is one of the factors affecting the growth of population in the country has proved to be a myth in Goa as the proportion of never-married women to total females in the age-groups of 15-44, according to 1971 census, was as high as 30 per cent. (56)

In Goa Catholic population form about 30 per cent of the total population, the attitude of Catholic Church is not helpful to family planning by artificial methods but the rhythm method, though not very sure, does not come in the way of Catholic doctrine and is practised by many educated people in the Territory.

It is also a fact that barring many villages in economically and aducationally backward talukas of Goa, namely, Satari, Sanguem and Canacona which have been covered now under Western Ghats Development Project, the remaining eight talukas are studded with villages most of which have a comparatively easy access to nearby towns. Good roads and suitable means of travel and communication have reduced distances and people are becoming more and more enlightened from new ideas through education and mass media such as newspapers, Radio, T.V. etc. including family planning programme and other welfare measures adopted by the Government.

Thus, the whole range of the above developmental factors of socio-economic nature, awareness of population problems and advantages of small family, reasonably good family welfare services available to people and absence of any strong political opposition to the programme seem to have a salutary effect on lowering the fertility level in Goa, Daman and Diu. The findings of the survey by International Institute for Population Studies, Bombay may throw more light on the issue.

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Population Education for Developing Countries

K.R. Salkar

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This work covers all aspects of population education an [illegible] designed as a textbook for students, teacher educators and those interested in the study of population matters. It examines world population growth from the Christian era up to the present age while depicting the unbalanced growth of population in the developed and developing countries.

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